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BOOK

A SIMPLE GUIDE TO RESEARCH WRITING

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2019

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PREFACE

My students at global perspective and project works, who are starting to prepare for higher learning at universities across the continent, inspired this book. Very often, little attention is paid to how students have to prepare and understand the processes of conducting research. Mostly, young scholars really struggle during the early stages of their university career regarding what is required of them and how to present their research proposal to their supervisors.

With this in mind, the purpose of this guidebook is to offer a critical and practical mind map to research writing to assist first time researchers in creating an appropriate design for their research studies. The book includes many simple graphs to illustrate and explain what is expected of researchers at each stage of their research writing and to enable them to deal with any, a missing link when conducting their research.

The guidebook is mainly intended to serve young students when compiling assignments on research studies and teachers who teach research writing at their schools, colleges and universities.

It with joy and appreciation that I thank the Nazarbayev Intellectual School of Physic and Mathematics in Astana (NIS PhM Astana) and my students and colleagues in the Social Sciences Department of Global Perspective and Project Works and Economics for providing the avenue for writing this simple yet comprehensive book.

I am highly indebted to the following editors, Jeanne Elslin and Paul Sweeney for their great insight, support and criticism that make this guidebook a success.

It is my greatest dream that this book will help others to succeed in good research writing and develop pioneers in the development fields. I look forward to suggestions from all readers and students for further improving the content design and making it even simpler.

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CHAPTER ONE: INTRODUCTION TO RESEARCH

Outcomes

By the end of the chapter, the student will be able to:

- Define research
- Distinguish between scientific and non-scientific analyses
- Demonstrate knowledge of research terminology
- Describe the characteristics of scientific research
- Sketch the steps in the research project
- Differentiate between the two major research paradigms.

INTRODUCTION

Research is a systematic way of answering questions about the world. It is intended to increase knowledge about the process of developing an understanding of the natural laws governing the universe; innovations or new ideas; commitment and technological advantages, which will improve the welfare of humanity.

Everybody takes part in some type of research. As individuals communicate with the world, they characterise explicit issues, gather data (information), examine information and settle on choices based on the information they obtained. This procedure can happen casually, now and again, or unconsciously. It is normally not logical and will in general be mistake inclined, thus, the idea of learning by experimentation. Scientifically, organised research has clearly defined characteristics that must be deliberately and unbiasedly pursued. Furthermore, non-scientific examination is inclined to an assortment of distorting factors.

The following two figures illustrate the features of non-scientific analysis and scientific research.

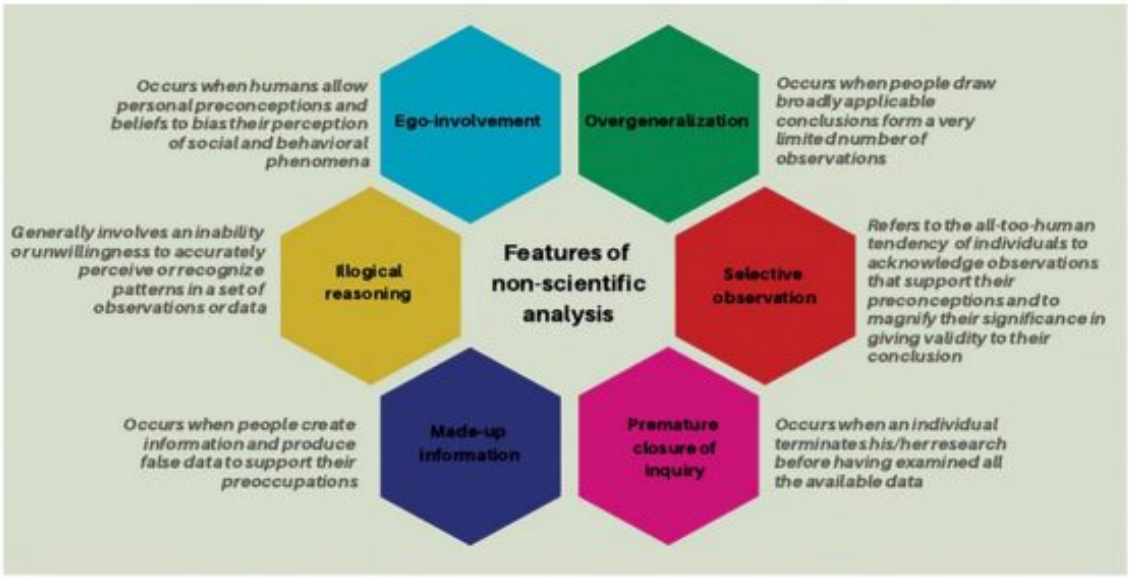


Figure 1.1: Features of non-scientific analysis

Scientifically orientated research is based on rules of logic, established methodological techniques and statistical theory. Hence, it comprises a process through which new knowledge is discovered.

Scientific research has several important features as giving in Figure 1.2

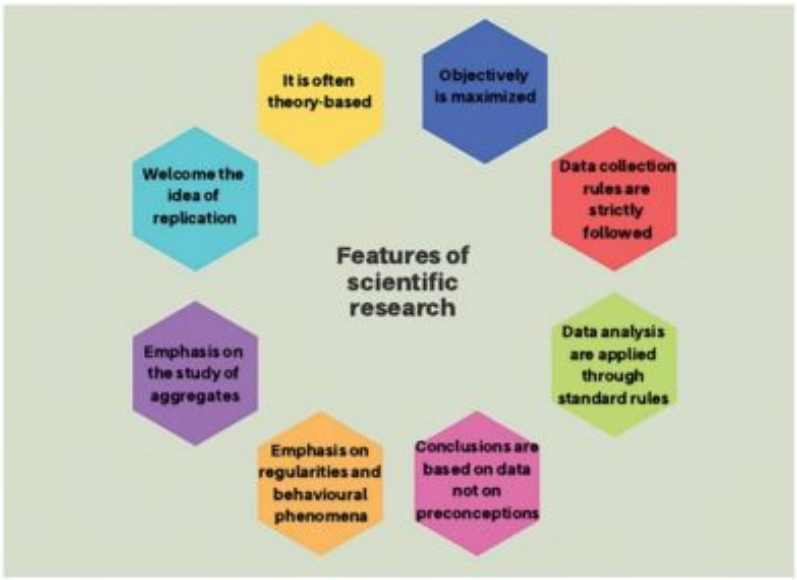


Figure 1.2: Features of scientific research

Some of the distinguishing characteristics of scientific research are:

- It is often theory-based because some theory is either tested or developed.
- It has minimal ego involvement because the researcher is often humble and willing to admit when they are wrong.
- The objective is maximised.
- Established rules for data collection are strictly followed.
- Standard rules for data analysis are applied.
- Conclusions are based on data not on preconceptions, beliefs, values or biases.
- It emphasises uncovering regularities and patterns of social and behavioural phenomena.
- It emphasises the study of aggregates rather than individual cases.
- It welcomes the idea of replication, i.e. for a study to be replicated by other researchers in order to confirm their findings.

Thus, the general objective of research is to discover new facts and to contribute to the general body of knowledge in the field under study. Saunders et al. (2003:2-3) noted that research needs to address issues and to provide a process for solving the problems. It is important to emphasise that research does not only need to provide findings that advance knowledge and understanding. It needs to address issues and provide a process for solving problems.

A distinct focus for research:

- The way in which researchers draw on knowledge developed by other disciplines
- The fact that people are busy. Thus, they are unlikely to permit research access unless they can see personal or commercial advantages.
- The requirement for research is to have some practical consequence. This means that it either needs to contain the potential for taking some form of action or needs to take account of the practical consequences of the findings.

There are two distinct forms of research, namely pure research and applied research. Pure research is conducted with the sole objective of understanding a phenomenon and to contribute to the development of research theories. Applied research on the other hand comprises a process to find solutions to current real-life scientific problems.

Figure 1.3 below illustrates the features of both pure and applied research, and is followed by Figure 1.4 which lists the purpose and context for both pure and applied research.

Note: pure and basic is used interchangeable in the figures.

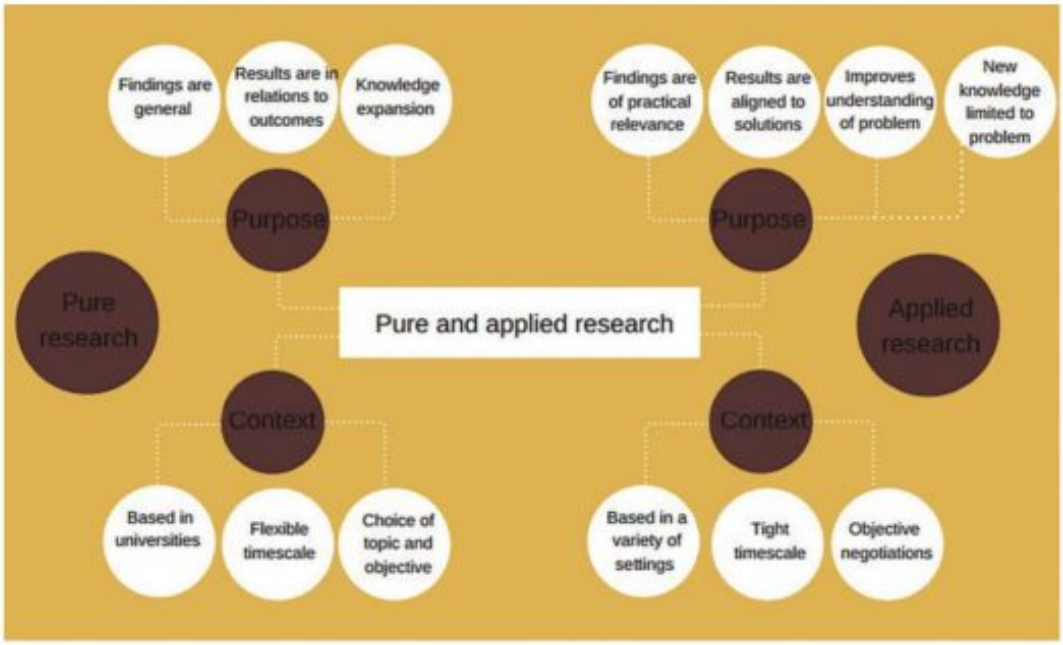


Figure 1.3: Pure and applied research

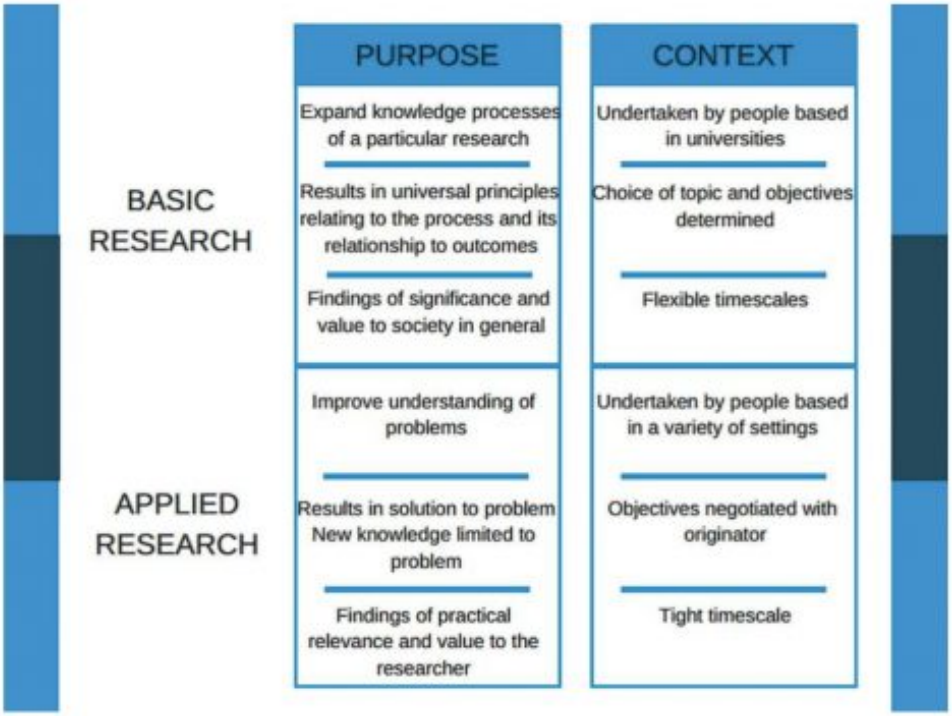
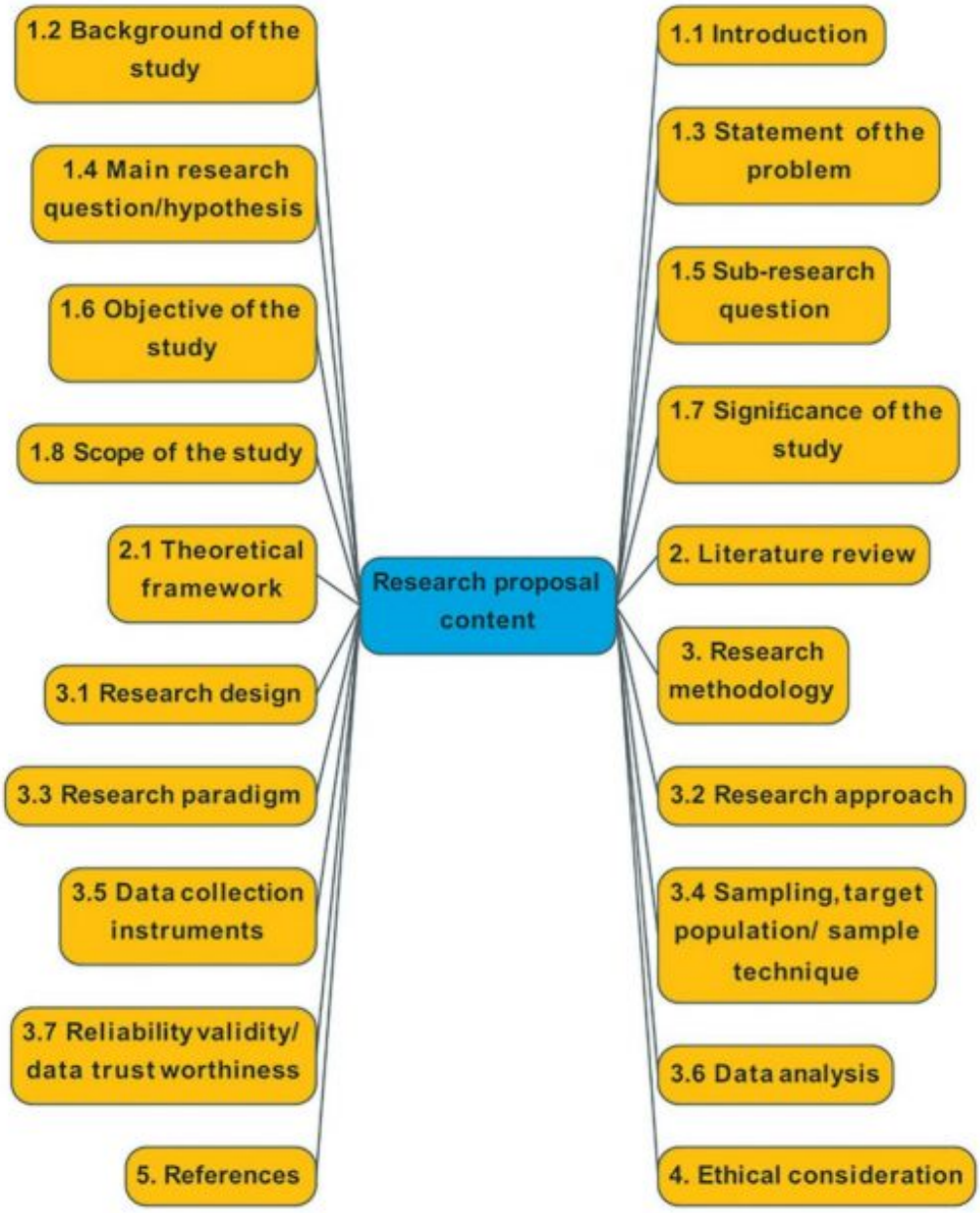
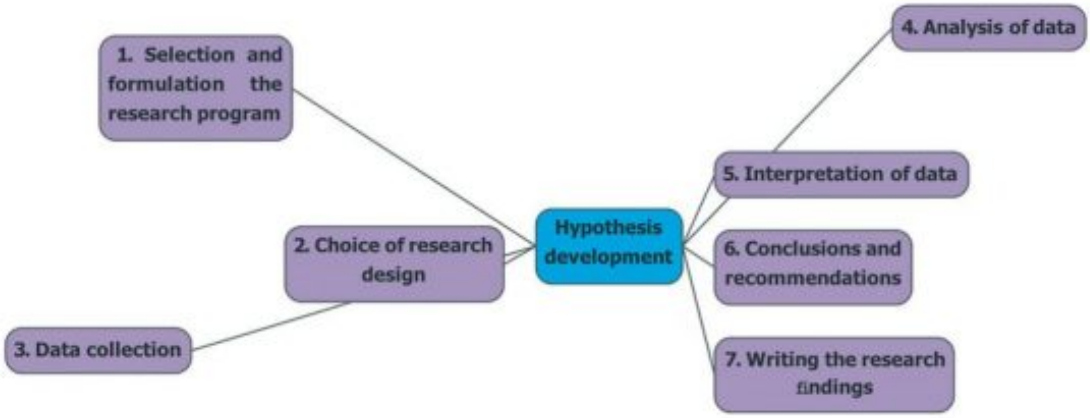


Figure 1.4: Purpose and context (Saunders, Lewis, and Thornhill 2003)



Mind map 1.1: Research proposal content



Mind map 1.2: Development hypothesis of research

Research is a multifaceted process with a particular sequence to be pursued to guarantee that the project undertaken is effectively completed. Despite this, there is also room for flexibility and inventiveness of the research procedure.

1. Selection and formulation of the research problem

- Select a topic for research: identification of the problem
- Formulate the research problem
- Acquire knowledge on current theory and research
- Literature review
- Identify and label the variables
- Define concepts and establish reserach definitions
- Formulate the hypothesis

2. Choice of research design

- Research format and research design
- Description of the samples
- Sampling procedures

3. Data collection

- Construction of the research instrument
- Actual data gathering

4. Analysis of data

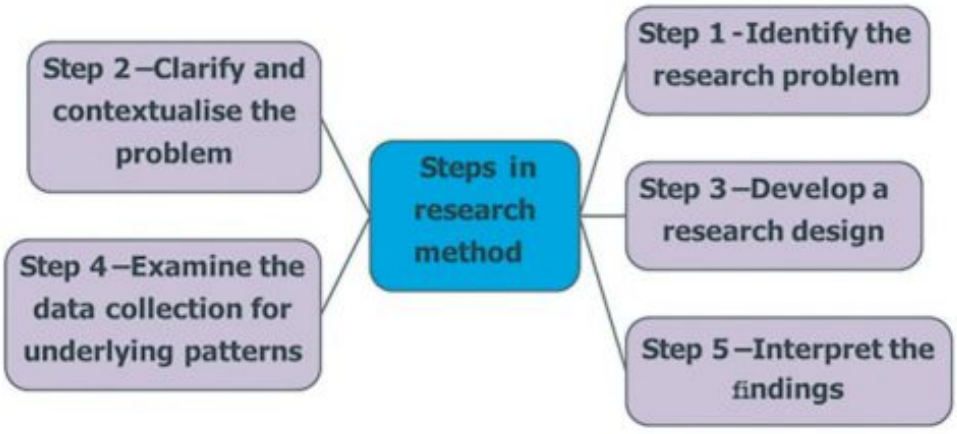
- Data processing
- Statistical analysis

5. Interpretation of results

6. Conclusion and recommendations

7. Writing the research report.

STEPS TO DETERMINE THE RESEARCH METHOD



Mind map 1.3: Steps in research method

Step 1. Identify the research problem

The first step in the scientific method is usually characterised by realising that some problem exists. This manifests in the form of a question that troubles the mind.

Step 2. Clarify and contextualise the problem

By participating in discussion and studying or reviewing current literature of what one is exploring, the issue is illuminated and the nature and specifics of interest of the problem are identified. As the issue is clarified, the underlying inquiry prompts more inquiries and the dynamic illumination of variables that may influence the examination of the underlying

problem begins to improve our understanding and to show increasing complexity.

Step 3. Develop a research design

This entails all activities the researcher engages in when planning an arrangement for the

exploration. A set of research questions or a theory should be detailed as an informed speculation about the conceivable responses to the issue. Now in the examination structure, the researcher has two differentiating approaches that offer them alternative courses in the advancement of the plan. The researcher may select the interpretive-inductive methodology where they start to observe before arriving at conceivable clarifications or they may select the hypothetical deductive methodology where the starting point is a hypothesis or a theory.

Table 1.1 Concepts of induction and deduction

Induction	Deduction
Start with data and look for patterns in the data e.g. people who are at risk averse in personal lives are more likely to be loyal	Forms hypotheses and tests in data collected subsequently e.g. brand loyalty increases with age

Step 4. Examine the data collected for the underlying patterns

When the research design is finished and information gathered, the researcher needs to inspect the information for fundamental patterns that recommend answers to the research exploration questions or test the adequacy of the hypothesis using proper statistical devices. Simultaneously, the researcher needs to perceive how the discoveries of the examination hypothesis and the mind in the field affect the theory or hypothesis.

Step 5. Interpret the findings

The progression includes the understanding of the discoveries and generalisation of the conclusion to the bigger collection of knowledge about the phenomenon. One of the objectives in this phase of the examination is to contribute change or expound on existing exploration and hypotheses in the field. This procedure may recommend strategies to discover the context of the problem.

RESEARCH PARADIGMS

The word paradigm is generally used in the academic world to convey three distinct sets of ideas:

- The researcher's basic beliefs about the world and the nature of reality
- The broad conceptual framework the researcher uses to carry out the scientific inquiry
- The specific methods and techniques which should be adopted when conducting research.

Mostly, there are two widely recognised research paradigms, namely the positivist and phenomenological. The positivist paradigm is sometimes referred to as the quantitative model and the phenomenological as qualitative or interpretivist model. These two paradigms are actually two ends of a spectrum with a combination of the two models occurring in varying degrees of emphasis along the field.

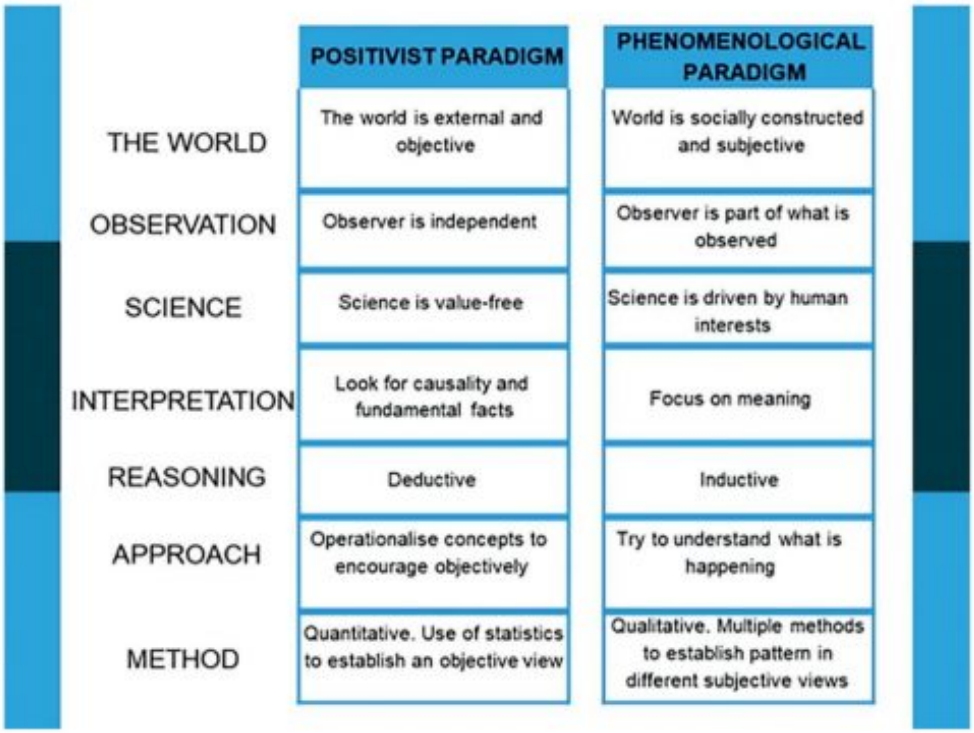


Figure 1.5: Research paradigms

METHODOLOGY AND METHODS

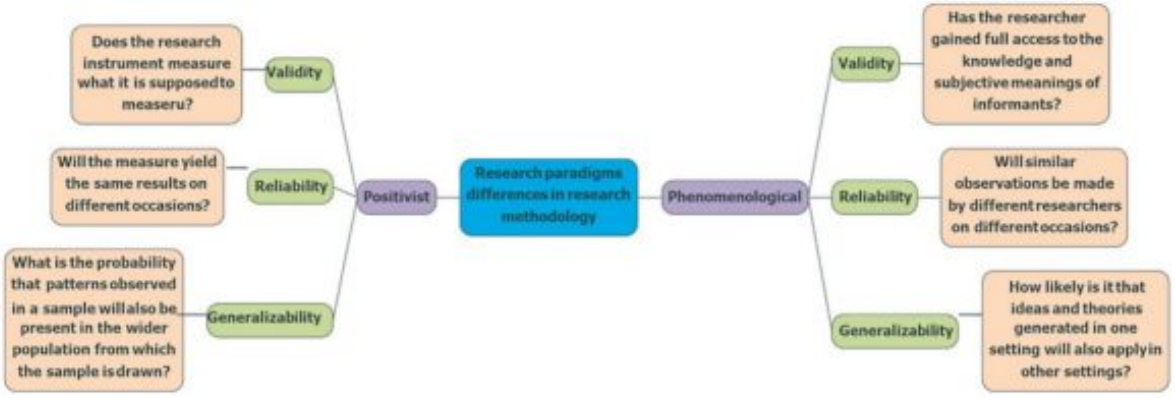
Research methodology is the process used to collect information and data for the purpose of making informed decisions. Methods, in contrast, refer to the specific means by which data are collected and analysed.

Therefore, the paradigm a researcher adopts has a direct relationship with the research methodology available to them.

Table 1.2. Features of the two main paradigms

Positivist	Phenomenological
Tends to produce qualitative data	Tends to produce qualitative data
Uses large samples	Uses small samples
Concerned with hypothesis testing	Concerned with generating theories
Data is highly specific and precise	Data is rich and subjective
The location is artificial	The location is natural
Reliability is high	Reliability is low
Validity is low	Validity is high
Generalises from sample to population	Generalises from one setting to another

Source: Hussey and Hussey (1997)



Mind map 1.4: Research paradigm differences in research methodology

VARIABLES

VARIABLES

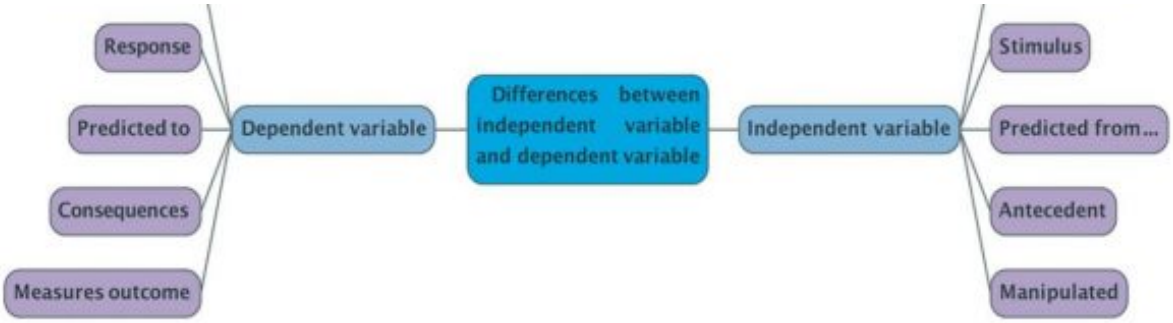
Any phenomenon, persons, places or things that the researcher is trying to measure in some way is referred to as a variable. The effective way to understand variables is to look at dependent and independent variable and the importance each of them imply in research writing.

Dependent variable always look at the impact of a test. It is the variable that the researcher is measuring or testing in an experiment. For instance, teachers can look at the impact of junk food on student's health. The dependent variable would be on student's health. Independent variables are factors that can be controlled or manipulated by the researcher and can produce more than one results.

Mind map 1.5 below gives some basic difference between dependent and independent variables.

Presumed effect

Presumed case



Mind map 1.5: Differences between independent and dependent variables

(Cooper and Shindler 2003)

CHAPTER TWO: LITERATURE REVIEW

Outcomes

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

- Clarify the purpose of a literature review
- Develop familiarity with the steps for a literature review
- Categorise and locate sources of information.

INTRODUCTION

According to Bloomsburg University guide on literature (2018), a literature material is the general account or summary of a previous research topic. The types of scholarly fields may be empirical, theoretical, critical/analytical or methodological in nature. A literature review seeks to describe, summarise, evaluate, clarify or integrate the content of primary reports.

A literature should give a theoretical base for the research and assist the author to determine the nature or the components of the research. The researcher's work contributes in some small but significant way to pushing the boundaries of knowledge in the field. The literature review should acknowledge the work of previous authors and in doing so, assures the reader that the research work has been well conceived. In addition, a literature review can purge the researcher of potential theories that have already been disproved.

Each researcher therefore has to be thoroughly familiar both with the major theoretical constructs in the field and all research literature that is available. A logical, systematic and critical review of the body of knowledge provides the backdrop for the research being undertaken. To demonstrate this through familiarity with earlier work in the field, all researchers are required to include a literature review in their study.

In the context of the study, a thorough literature review can be described in terms of process and product.

- The process of the literature review requires the researcher explore the literature to establish the status quo, formulate a problem or research enquiry, defend the value of pursuing the line of enquiry, and compare the findings and ideas with their own.
- The product involves the synthesis of the work of others in a form to demonstrate the accomplishments of the exploratory process.

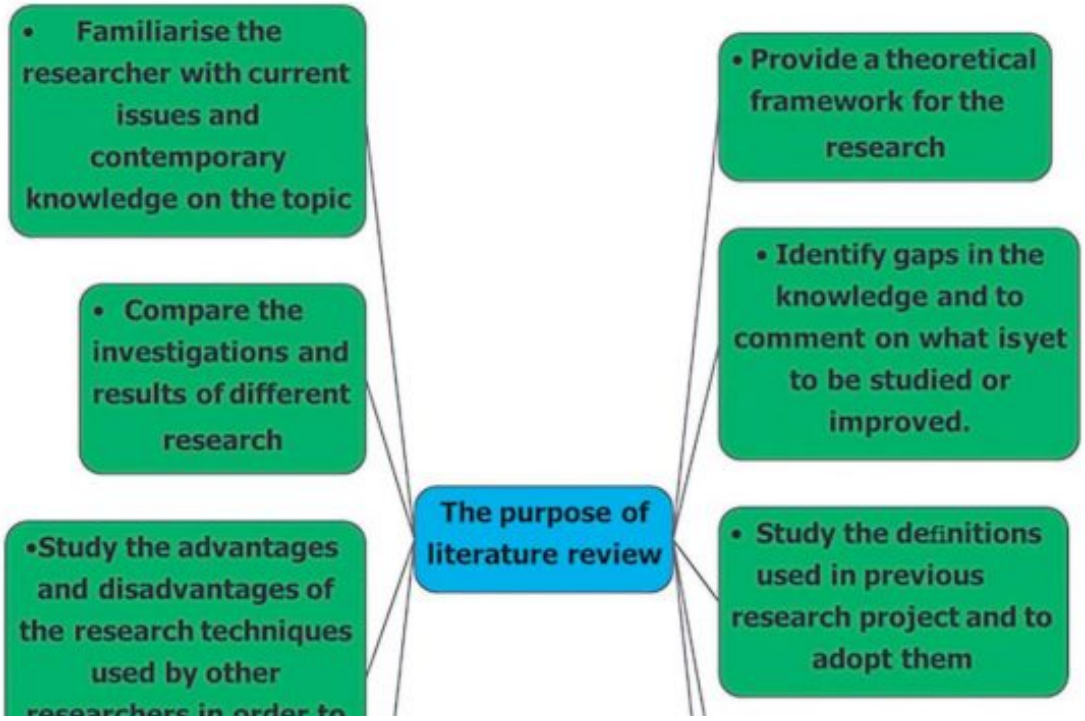
The literature review is basically a short survey of relevant work done by other theorists.

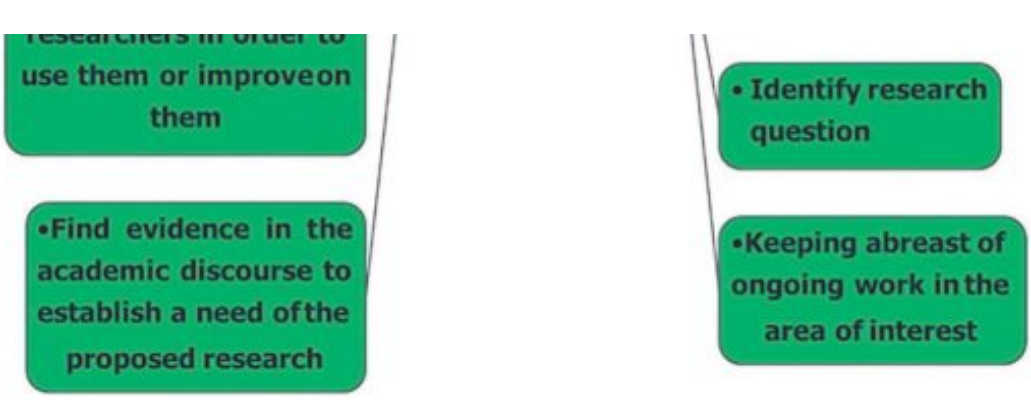
researchers, academics, etc. in the same field.

The literature review process is an integral part of research planning. It provides a foundation for the researcher /student's research and triggers creative thinking. It also assists in

identifying appropriate research methods and techniques, and helps in formulating a discussion about the implications of the research.

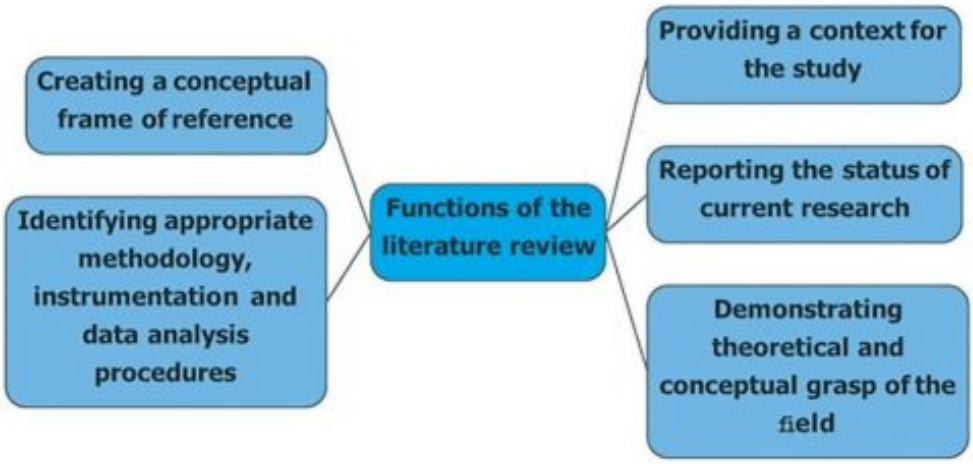
THE PURPOSE OF THE LITERATURE REVIEW





Mind map 2.1: The purpose of the literature review

FUNCTIONS OF THE LITERATURE REVIEW



Mind map 2.2: Functions of the literature review

Provide a context for the study

The literature review provides a concise synthesis of existing research on the current research topic. This creates the context from the past for the new study to be conducted with the new subject and newly obtained data.

Create a conceptual frame of reference

The researcher must carefully assess the key components in this body of literature and identify areas that are still conceptually and methodologically under-developed and point out 'gaps' in the field. Using the basic writings and theoretical constructs of the problem, the researcher must fully familiarise themselves with all the ramifications of all points of view in the current literature.

Report the status of current research

The point here is to provide a brief overview of past research, distinguish areas of consensus among researchers in the field of hypothetical and theoretical issues, taking note of the territories of significant discussion and debate. It is necessary to distinguish the main analysts and scholars in the field and details of the schools of thought arising from their work, which refer to real ways to deal with research in the field. The literature review will pinpoint what has been done and how the current research could address explicit issues or gaps the field.

Identify appropriate methodology, instrument and data analysis procedures

A review of the literature helps the researcher to identify what research approaches and methods have or have not been tried and to determine what data gathering instruments already exist. Review of earlier research provides insight into a variety of research methods used and enables the researcher to select a method, design an appropriate research instrument and develop a data analysis strategy.

Moreover, reviewing the literature provides clues to factors that influenced the method and instrumentation of earlier research and explains how the research was carried out. Lastly, a review of the literature assists the researcher with the conceptual and operational definition of the key terms, assumptions, limitations and the articulation of research questions and hypotheses of the new research project.

Demonstrate theoretical and conceptual gaps in the field

It is critical for the researcher to understand how earlier research helps to guide and inform their own study. Therefore, the literature review must not only improve the researcher's knowledge of the chosen field but also demonstrate the depth of understanding of the field.

Table 2.1 below provides lists of the different types of literature sources available when conducting research.

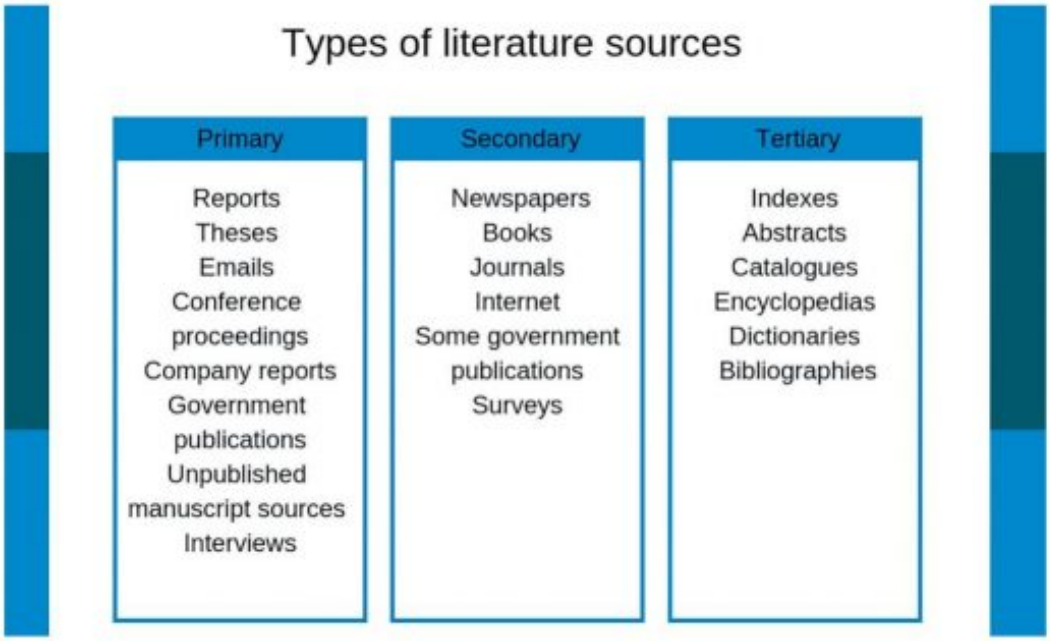


Figure 2.1: Types of literature sources

Strategies for literature review

- Structure the literature review as early as possible in terms of headings and sub-headings; these can always be revised and amended as time goes on.
- Draw concept maps.
- Write as much as possible about aspects of the research area; writing can always be restricted later.
- Formulate questions that the literature review addresses.
- Read through the theses or assignments written by previous researchers and examine their literature review chapter.
- Search indexing and abstract databases.

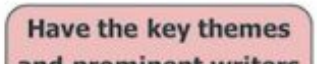
The scope of the literature review is illustrated in Mind map 3.2 below.

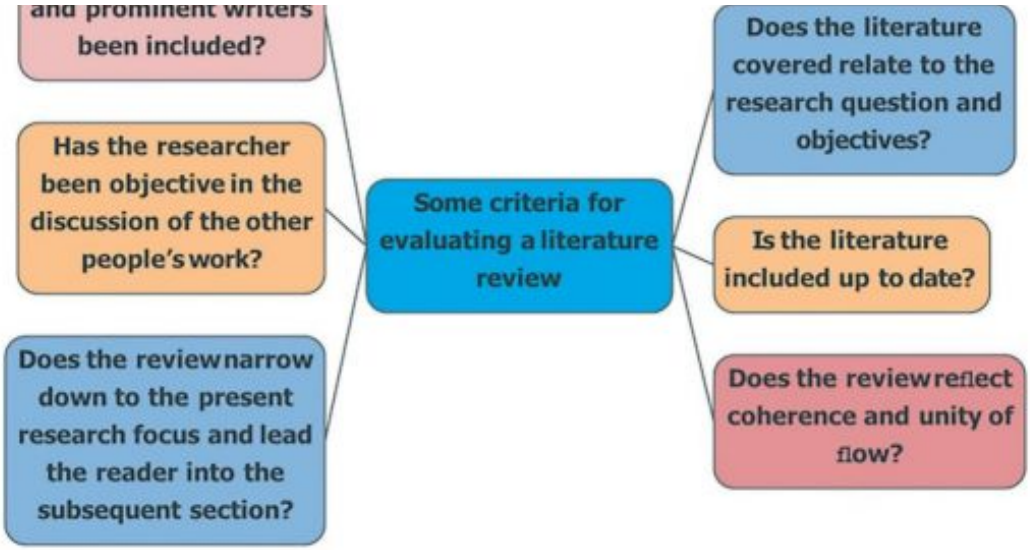
Mind map 2.3: Identifying the scope of the literature review

The main problem of writing the literature review is what to include or not. This is a common concern for many researchers. The following range of factors is critical to identify the scope of coverage of the literature review.

- Comprehensiveness – the review should cover all existing and past knowledge on the area under study
- Specificity – confine your writing to your particular topic
- Authority – ensure that the authoritative authors have been identified
- Currency – include current thinking and writing in the field
- Availability – be interested in material which is readily available
- Relevance – include only relevant material.

Criteria for evaluating a literature review are listed in Mind map 2.4 below, followed by the steps required for writing the literature review in Mind map 2.5.





Mind map 2.4: Criteria for evaluating a literature review
(Saunders, Lewis, and Thornhill 2003)

Mind map 2.5: Steps in writing literature review

Step 1: Decide on the format

Generally, the literature review forms a chapter of the research report. Whatever the format, the relevant literature must not be presented as summaries of books and articles but as a blended and concise evaluation of current information on the subject.

Step 2: Develop a unified theme

The literature review should provide a concise and coherent account of the existing literature on the research topic. Hence, there has to be unity of the theme and a logical cohesion of ideas throughout the review. Important lines of thought must emerge from the introduction that presents a broad entry to the field to a narrow focus which includes the pivotal issues in the current research. The objective is to elicit the reader's interest and involvement in the current research by providing a critical overview of previous work in the field and to contextualise the present study.

Step 3: Organise the collated material

The presentation of the material must reveal a clear underlying design. As noted above, the literature review must not read as various summaries of journal articles and books. A common strategy used by any researcher is to organise their material chronologically under carefully arranged subsections of the topic. Moreover, within the design, a good researcher will:

- start at a level that is more general before narrowing down to the focus of the study.
- review some of the key concepts and areas of research.
- provide a flow of information that synthesises, compares and contrasts the work of key writers in the field.
- highlight most the relevant studies in relation to the topic.

Step 4: Ensure a smooth flow

The flow of research writing is very important. Therefore, the researcher must ensure that there is a smooth flow from section to section by highlighting the logical connection between different components of the review. The biggest challenge in research writing is to uncover the possible intersections among seemingly unconnected fields of information.

Step 5: Develop and work from an outline

An important final step before the actual writing process is to develop a detailed plan and to organise the material in terms of the researcher's design. This will enable the development of a schematic plan that allows flow of the main lines of thought in the research topic, leads

the reader to the specific, and arouses interest in the researcher's own effort to advance knowledge in the field.

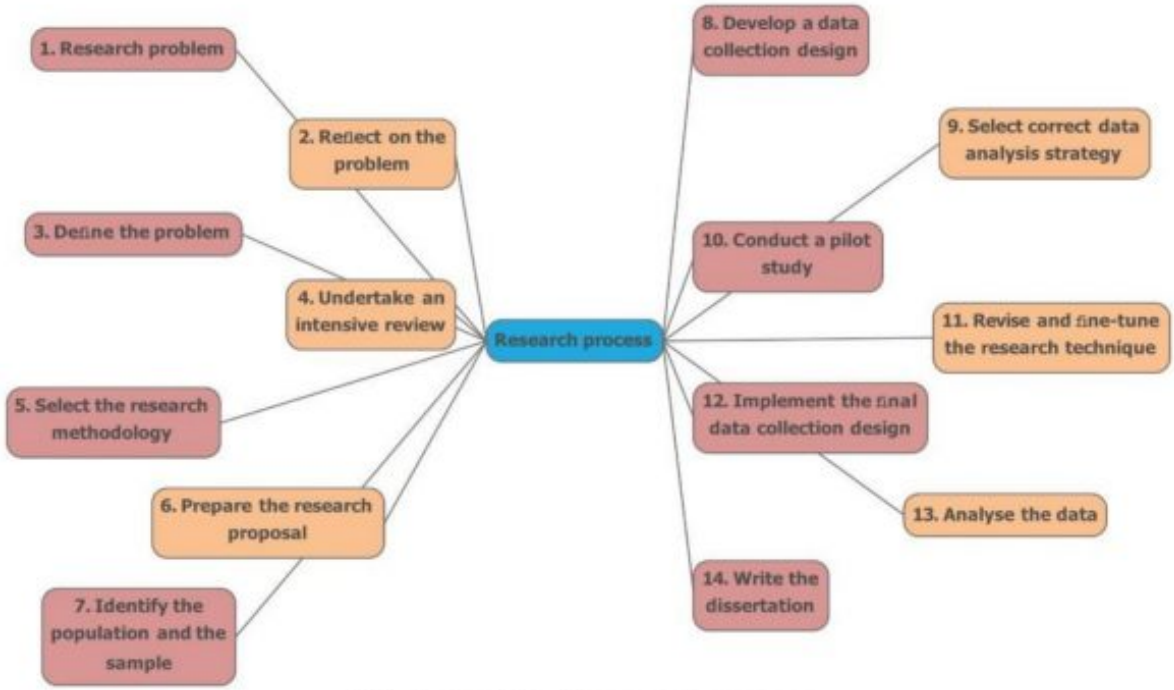
Outcomes

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

- Outline the features of research paradigms
- Label and explain the features of various research strategies.

The research process is a systematic process that involves an objective gathering of information for analysis to assist the researcher to come a credible conclusion.

RESEARCH PROCESS



Mind map 3.1: Research process

The research process has clearly defined elements that reflect an application of the research methodology. These elements in the mind map are elaborated on below for clear understanding:

1. Commence with the research problem

The researcher begins the study by focusing on a problem or an idea that they believe needs to be explored.

2. Reflect on the problem

The researcher has to reflect on the significance of the problem and its relevance to the study.

3. Define the problem as a specific research problem

An initial review of the literature should enable the researcher to begin developing a frame of reference for the research, formulating conceptual and operational definitions of key concepts, identifying the significance of the research problem and crystallising in specific terms the research topic for the research problem.

4. Undertake an intensive literature review

The purpose is to attain a deep understanding of the problem at hand and its context. Further, it is necessary to create a concise, critical and evaluative summary of previous research literature on the research topic. The researcher must now to undertake an intensive literature review. This will help to gather ideas for the literature design, data collection, data analysis instruments and techniques.

5. Select the research methodology

The researcher has to begin to formulate one or more hypotheses, research questions and research objectives, decide on the type of data needed, and select the data collection and data analysis strategies. It is therefore necessary to select the research methodology to gather decisions about the research paradigm, research approach and research method.

6. Prepare the research proposal

The researcher has to prepare a sound research proposal that contains structured details of the research topic.

7. Identify the population and the sample

The researcher has to define the target population, identify the sample selection method, decide on the sample size and identify those who will participate in the study.

8. Develop a data collection design

The researcher has to develop the research instruments that will fully address the needs of the topic. To achieve a balance between the adequacy of the data collection design and the availability of material and human resources, the researcher must take note of cost in terms of time and money before the start of the research and data collection process.

9. Select an appropriate data analysis strategy

The researcher must be aware of the statistical tools needed to analyse the data and decide on the tables and diagrams that may be appropriate for examining the patterns and regularities in the data.

10. Conduct a pilot study

It is important to conduct a pilot study to identify areas that may require revision and correction in order to refine both the instrument and data analysis procedures to achieve the research objectives and to review the choice of statistical tools.

11. Revise and fine-tune the research techniques

The findings of the pilot study could be valuable to make the necessary changes to the research instruments and the data collection and data analysis strategies.

12. Implement the final data collection design

The researcher should implement the data collection design and at the same time should not lose sight of the ethical issues of participants in the study. The researcher must ensure that the study conforms to broad ethical guidelines.

13. Analyse the data

During data analysis, the researcher should be guided by the research objectives. It is necessary for the researcher to ensure that their own preferences and preconceptions are not imposed on the data.

14. Write the theses/dissertation

Before writing the dissertation, the points about the procedure to be adopt in writing the literature review should be taken into consideration.

Develop an appropriate research design

The research process outlined above spells out the actual process. A concurrent process, however, which is the development of a research design appropriate for the needs of the research topic, requires the researcher to engage in a series of choices and decisions.

RESEARCH PHILOSOPHY

The research philosophy comprises the perceptions of the way data about a phenomenon should be assembled, analysed and used. Research paradigms incorporate the fundamental philosophical concepts and values about the nature of reality and the scientific pursuit of knowledge. Importantly, there are two schools of thought about science and knowledge – positivism and phenomenology. They hold diametrically different views about the research process and research design.

Positivist (quantitative research)

Positivism evolves around the use of numerical measurements and statistical analyses of measurements to examine social phenomena. Positivist research is generally quantitative in nature.

- It views reality as a consisting phenomenon that can be observed and measured.
- It places great premium on objectivity and reliability of findings and encourages replication.

When it is applied to social sciences and business research, positivism may not always be appropriate, as all social phenomena cannot be accurately and reliably measured, thus reducing the validity of the findings.

Phenomenological (qualitative) research

Subjective researchers argue that the world is a social construct and that science is driven by human interests and that the researcher, as a subjective entity, is part of the world they are observing.

- Objectivity is an impossible aim.

- The findings often have greater validity and less artificiality as the process of observing phenomena in a natural, real-life setting.
- It often allows researchers to develop a more accurate understanding of those phenomena.
- It often reveals depth of understanding and richness of details.

However, research driven by phenomenological philosophy is sometimes undermined by the subjectivity of the researcher and the poor reliability of the findings in that two researchers may arrive at different conclusions based on their observations of the same phenomena at the same time.

Figure 3.1 below is a layout structure of qualitative research and the choice a researcher may undertake.

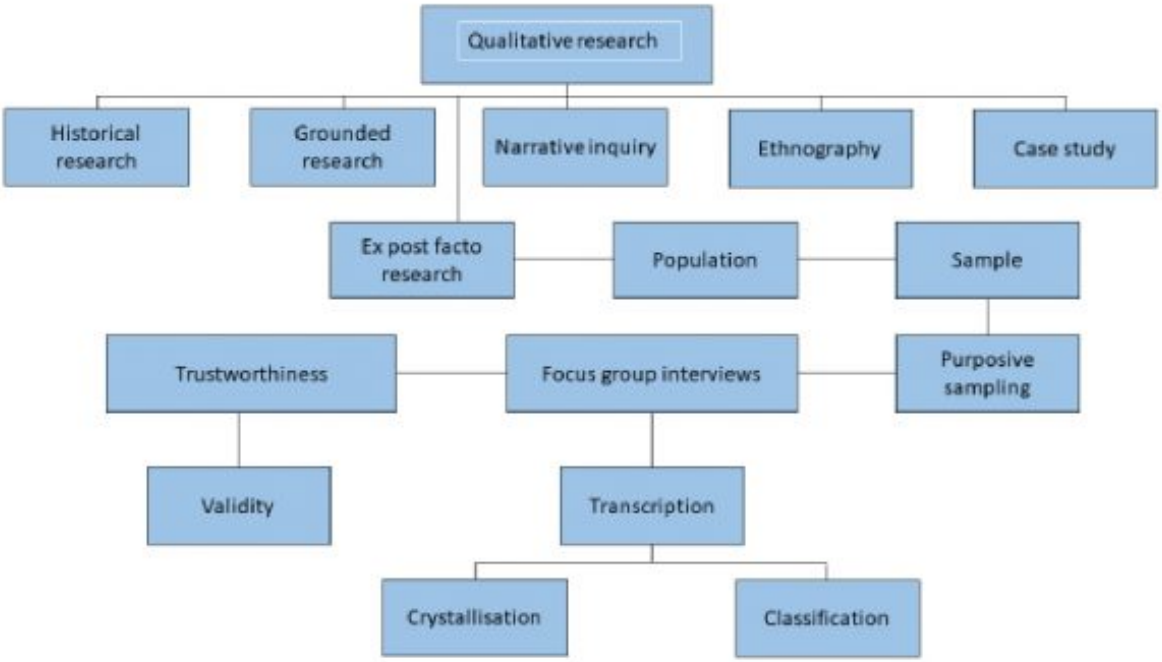


Figure 3.1: Structure of qualitative research

Mixed research approach

Noticing the strengths and weaknesses that flow from both positivistic and phenomenological biases in research, researchers sometimes adopt a mixed approach that draws on both positivism and phenomenology.

The use of multiple research methods enables the researcher to increase the reliability and validity of the findings.

The weakness of one method can be reduced by the strengths of other methods incorporated in the same study.

Figure 3.1 below provides aspects relevant in the research philosophy.

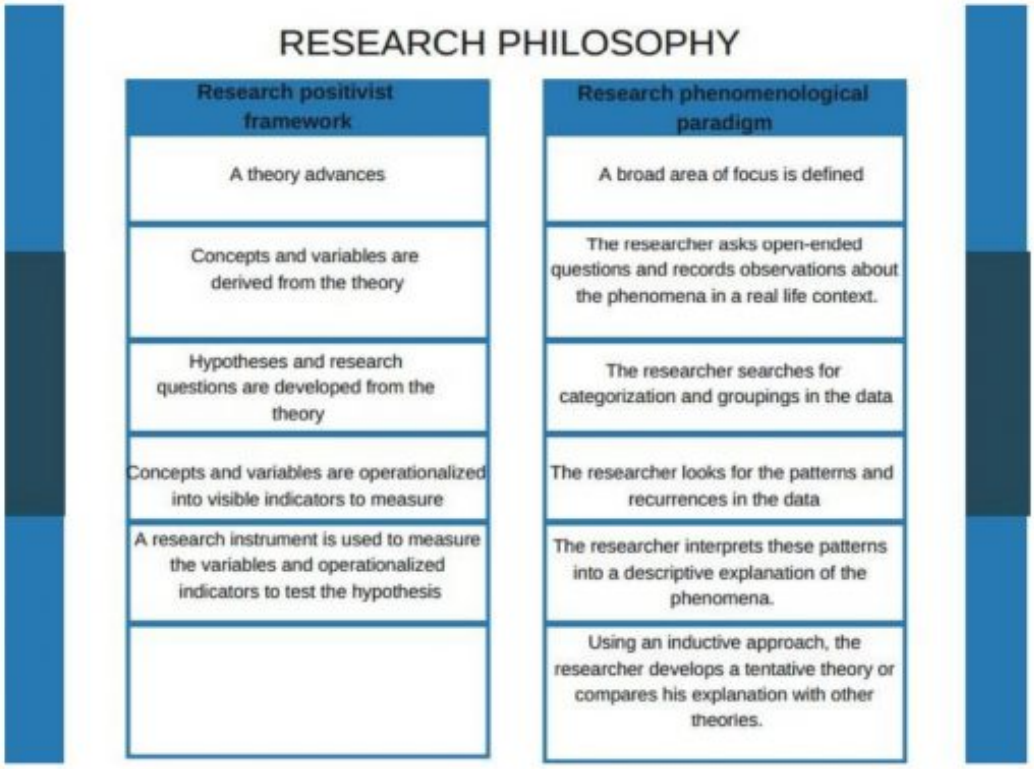


Figure 3.2: Research philosophy

RESEARCH PROCESS WITHIN A MIXED METHOD FRAMEWORK

The two main paradigms represent two extremes of a continuum; therefore, it is possible for the researcher to use a blend of philosophical assumptions and methodologies. Creswell (2014) noted following about the mixed method framework:

- It is a – two-phase design in which the researcher conducts entirely separate positivist and phenomenological examinations of the problem.
- The dominant/less dominant is where one paradigm dominates while the other is

The dominant/less dominant is where one paradigm dominates while the other is used for a small component of the study (e.g. the researcher may use observation and in-depth study to generate themes and variables and then use a quantitative, hypothesis-testing design for the study as a whole).

The use of a mixed-methodology design allows the researcher to combine aspects of both paradigms using the advantages of both when appropriate.

RESEARCH STRATEGIES

A brief description of some of the important research strategies available to students/researchers is provided next. Each strategy differs from others in two distinct areas: the nature of the question asked and the method used to answer it.

Positivist research strategies/experimental design

The basic experimental designs used in research have been adapted from the physical and biological sciences. Experimental studies seek to identify causal relationships.

- The aim is to manipulate the independent variable in order to observe the effect on the dependent variable.

Because of the greater difficulty to control experimental conditions in the human sciences, experimental methods can only be used under very clearly defined conditions. The typical experimental design in for instance in business research involves:

- the selection of a sample of subjects; random assignment of these subjects to experimental and control groups;
- the exposure of the experimental group to the independent variable which is withheld from the control group;
- finally, the evaluation of the two groups on the dependent variable. There are other variations in experimental design – repeated measures design, matched-pairs design and single-subject design.

In a quasi-experimental design, the researcher does not have as high a degree of control over the independent variable. People, for example, are already assigned to groups such as social class, type of injury, type of occupation and income group, for which the researcher is testing the effects. The experimental designs isolate and control all the factors that could be responsible for any effects except the one under examination. The most important use of quasi-experimental research designs is where researchers cannot, in good conscience, assign people to groups and test the effect of the group's membership on some other outcome. For instance, researchers interested in the effect of retrenchment on staff morale could not encourage the process or actively identify those to retrench in any organisation. Rather they would seek out companies where retrenchments are occurring and then conduct the research.

Quasi-experimental research is also called post-hoc research or after-the-fact research means that the actual research takes place after the assignment of groups such as employed versus unemployed, male versus female, etc.

Surveys

The survey is a research design in which a sample is selected from a population and studied to make inferences about the population. Surveys typically use questionnaires and interviews in order to determine the options, attitudes, preferences and perceptions of persons of interest to the researcher.

In well-designed surveys, the sample can be carefully selected to ensure that it is a representative of a larger population; it is possible to use statistical techniques to assess the applicability and generalisability of the findings to the large population. To ensure greater reliability and validity, the researcher must also ensure that the questionnaire and interview do not reveal bias in the way the items and questions are presented. The way questions are asked, for example, can influence the responses.

Phenomenological research strategies

Case study

A case study is a research strategy and an empirical inquiry that tries to investigate a study phenomenon within a real life context. They are normally based on the following:

- In-depth investigation of a single group or events to explore and understand the underlying causation principles.
- Involves looking at groups, a project, institution or company.
- Requires intensive investigation of the factors that contributed to the characteristics of the case under investigation.
- Draws on multiple sources of information and tells a story, usually in chronological order.

The aim is to create a rich, textured description of a social process. This can set the stage for more questions that can be asked later, using more tightly structured methods. Case studies are usually helpful when the researcher is dealing with the following questions:

- How or why questions
- Phenomena over which the researcher has little control
- Phenomena embedded in a real life context.

Data collection methods in the case study

Figure 3.3: Case study data collection methods

The case study design differs vastly from other research methodologies in that researcher tries to examine a huge number of elements by constraining the number of cases that should be observed. Another distinctive element is that the case study researcher in general tends to be an in-depth investigator of phenomena, as they exist in the character setting (Yin 2009).

Two techniques that are often used to analyse case study data are pattern matching and time-series analysis. Pattern matching is the process of taking several pieces of information that seem logically related and connecting them to some idea or theoretical proposition. The patterns should be compared to rival theories, looking for the best 'fit' of observed data to theory. Time-series analysis involves comparing a trend of data points to some theoretically significant trend, or to some other alternative explanation.

Action research

Action research can be defined as a reflective process of progressive problem solving facilitated by individuals, or groups working with other teams trying to improve and address an issue in a community. Action research is a strategy that has the dual aims of action and research:

- The action is to bring about change in for instance a community or department
- The research seeks to increase the researcher's understanding and/or that of the target group/community.

Action research is a cyclical process that consists of:

- planning
- action
- review of the outcomes of action
- reflection because of outcomes.

At each point in this cycle, the data available is used to determine the next stage. The whole purpose of the research is to determine simultaneously an understanding of the social system and the best change opportunity available.

Researchers generally adopt an action research design to increase the reliability of their findings by working with various data sources, ideally autonomous or partly independent samples of witness/informants, diverse research settings, the same informant responding

to different questions which address the same topic from some different directions, data gathered at various occasions by different researchers or diverse techniques.

Grounded theory

Grounded theory can be defined as a step-by-step methodology in the social sciences that involves the construction of differentiated theories through gathering methods and analysis of the data. The use of grounded theory methodology as a research strategy remains minimal partly because of the bias of favouring deductive and quantitative approaches and partly because of a critical view that some researchers have of the grounded theory methodology.

Grounded theory has as its basic tenet view that theory must be inductively derived from the data. The theory, in short, must emerge from and be grounded in data.

- Data collection, analysis and theory formulating are regarded as reciprocally related.
- The emergent theory should account for the phenomenon that is relevant and problematic for those involved.
- Data collection and analysis are fused deliberately, and the initial data analysis can be used to shape continuous data collection.
- Interweaving data collection and analysis increases insights and clarifies the parameters of the emerging theory.

The approach also argues for initial data collection and preliminary analyses to take place in advance of consulting and incorporating prior research literature. This is to ensure that pre-existing constructs do not shape the current analysis and theory formation.

Hence, the literature review is purely needed to be underscored but is delayed, not omitted, and is regarded as an important part of theory building.

Ethnography

Ethnography normally involves the scientific description of people, customs and their culture as well as the mutual differences between human beings. Ethnography is not a widely used research strategy as it is time consuming and generally requires the researcher to immerse himself in the real-life context of interest as a participant observer. Over a period, the researcher gathers data and applies an inductive methodology to uncover patterns of meaning.

Mixed research strategies

Positivism and phenomenology are like two ends of a continuum. Researcher may regularly create a research structure that joins research strategies from those two paradigms in a solitary research plan. For instance, a researcher may utilise a subjective methodology in conducting in-depth interviews with people from the objective populace and after that continue to test these provisional ends in the bigger populace through a survey research technique and quantitative, statistical analysis tools.

RESEARCH PURPOSE

Research design may also be classified in terms of its purpose. Below are some of the common forms of research design based on their general purpose.

Causal-comparative research

The fundamental target of causal-relative examinations is to use an exploratory or quasi-experimental design to contemplate firmly equivalent groups (except on the variable being studied) to establish contrasts, explanations behind these distinctions and to reveal causal connections among factors. The causal-comparative approach in research is profitable in distinguishing conceivable foundations for human conduct in the business and the board setting.

Correlational research

Correlation research refers to studies in which the purpose is to discover a relationship between variables with correlational statistics such as the correlational coefficient® which measures the strength of this relationship. A correlational connection between two factors is every so often the after effect of an outside source; the researcher should be cautious in not contending for a circumstances and logical results connection between the factors

only in view of the relationship between them. In the event that a solid connection is found between the two factors, causality can be tested by utilising an experimental research design. It is important to note that, logically speaking, correlation is necessary for causation but not sufficient for it.

Correlation studies can sometimes be prediction studies or 'relationship studies'. A noteworthy preferred standpoint of correlational research is that the examiner can investigate a wide range of connections in a similar report. One of the most important points about correlation research is that it examines relationships between variables but in no way implies that one causes the other.

Explanatory research

Explanatory studies seek to explain the relationship among variables and to identify the connectedness among the components of a phenomenon. The essential point in these examinations is to intently study a problem, gather information on the subject, and through an explanatory and deductive procedure, frequently involving measurable investigations, to clarify the relationship among factors.

Descriptive research

Descriptive research describes the characteristics of an existing phenomenon.

- Descriptive studies seek to discover answers to questions relating to the fundamental characteristics that define the research subject.
- Often descriptive studies are conducted to advance the broad aims of science.
- Descriptive research is done to develop knowledge on which the problems and explanations of subsequent research are based.

Descriptive research, however, often goes beyond a mere description of the phenomena. For instance, if interested in the occurrence of conflicts and development and their impact on the people, the researcher may survey a sample of the relevant community and present a descriptive account of the phenomenon. However, the researcher may also examine the responses of the people in the affected community and through analysis of the data will identify a pattern of behaviour at various levels of the community.

Exploratory research

Exploratory studies are primarily concerned with finding out what exists and gaining new insight into a phenomenon. The researcher undertakes an in-depth search of the literature, interviews specialists in the field, and conducts focus group dialogues. From these different sources of data, the researcher starts to form an idea of the actual field of intrigue.

CHAPTER FOUR: SAMPLING

Outcomes

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

- Explain why sampling is fundamental to research
- Define the terms generalisation and representativeness
- Explain the difference between a sample and a population
- Discuss the appropriate usage of the various types of probability and non-probability sampling techniques
- Be familiar with a range of sampling techniques
- Identify the different types of sampling.

INTRODUCTION

Sampling is a procedure of methodically choosing targets for consideration in a research project. The assets of the sample or the group or subgroups of the population are then generalised to the population. This process of sampling helps to solve the research problem.

- This process of selecting a small part from the relevant group of the population is called sampling.
- The essential point is that by choosing a portion of the components in a populace and concentrating research consideration on this limited group, the specialist may apply the discoveries of the investigation to the entire populace of interest.

A population is the full arrangement of components from which an example is drawn. A populace component is the single unit of the example from which estimations and perceptions are drawn.

Note:

- In sampling, the term population is not used in the normal sense, as a full set of elements may not necessarily be people. For instance, the researcher may wish to examine the administrative effectiveness of local schools in Astana – then the population from which they would draw the sample would be local schools and each local school would be an element in the population of local schools of Astana.

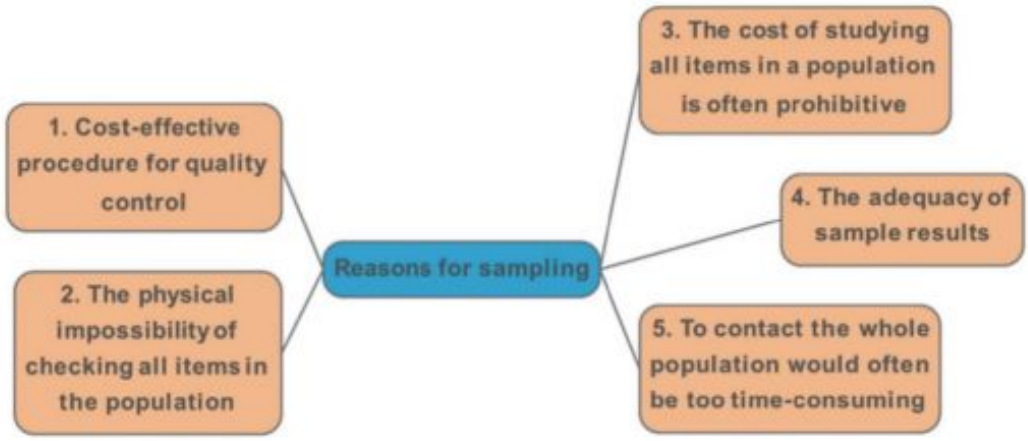
There are two types of sampling – **probability and non-probability**.

In probability sampling, the likelihood of any one member (or element) of the population being selected, is likely known. For example, if there are a thousand local schools and two

hundred local high schools in Astana, the odds of selecting one high school as part of the sample is 400:1000 or 0.40.

However, in non-probability sampling, the exact number of elements in the population is unknown with the result that the likelihood of selecting any one member in the survey and cannot be computed.

THE WHYS OF A SAMPLE POPULATION



Mind map 4.1: Reasons for sampling

As noted above, it is often not feasible to study the entire population. The major reasons why sampling is necessary, as listed in Mind map 4.1 are discussed next:

1. Cost-effective procedure for quality control

To guarantee that its items satisfy the guideline tests. Every item in the sample should go through a thorough test and its capability recorded. Clearly, if all things are exposed to limited tests, none would be accessible or available to be used.

2.The physically impossibility of checking all items in the population

In cases in research where the population is enormous and developing, it is hard to portray in fixed terms the range of the population.

3.The cost of studying all items in a population is often prohibitive

The cost of including all the members or items of population is often prohibitive. Unfortunately, selecting a smaller population can result in an invalid sample.

4.The appropriateness of sample results

Good sampling techniques should maximise the degree to which the samples represent the population. The results are therefore generalised to the whole population.

5.Time-consuming to contact the whole population

In instances where population has more than 1000 objects, to interview every member would take a considerable amount of time if the researcher were undertaking the task alone.

The sampling cycle

Three specific sub-components are relevant:

- The invited sample
- The accepting sample
- The data-producing sample.

The invited sample is all components of the populace chosen to form the sample and invited to participate in the study. The section of the sample that acknowledges the invitation to participate in the study is called the accepting sample. The data-producing sample is the actual portion of the sample that provides information for the study.

Representatives

Applying the findings and generalisation of a study to the population and the universe is only permissible when the sample can be considered a representative of the population. Hence, in the sampling process, the researcher must be:

- Guided by the recurring requirement to ensure representation.
- It is important for the researcher to face the critical issue of determining whether the actual number of respondents constitute an adequate percentage of the sample for the findings to be representative of the study population.

KINDS OF SAMPLING

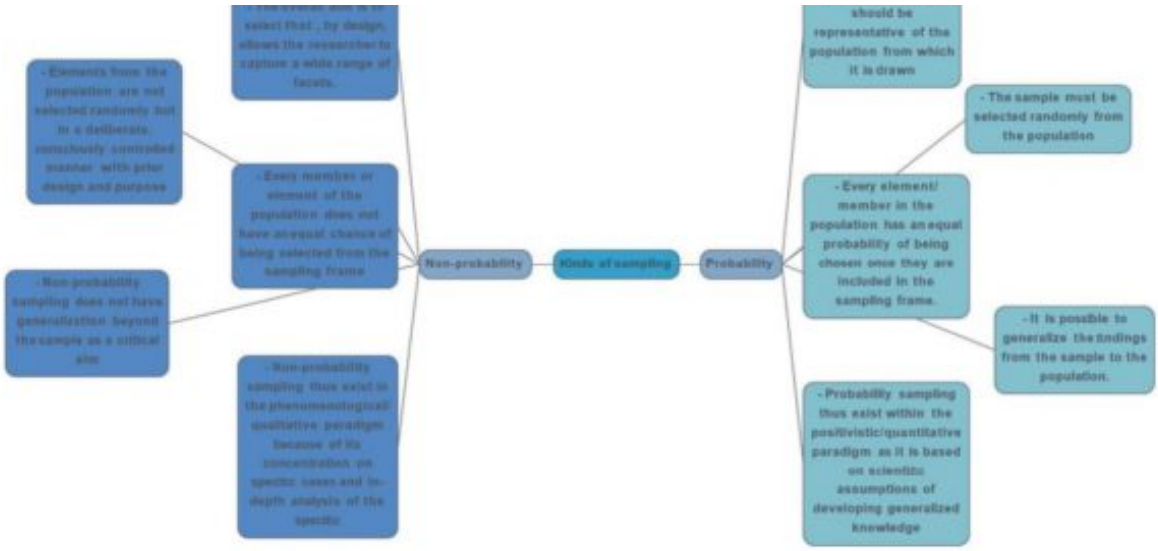
The two extensive categories of sampling designs are probability sampling and non-probability sampling.

Probability sampling is based on the concept of random selection – a selection procedure that ensures that each element of the population is given a known chance of selection.

Non-probability sampling is non-random, purposive and subjective because the researcher may select the sample using criteria other than those associated with randomness of selection.

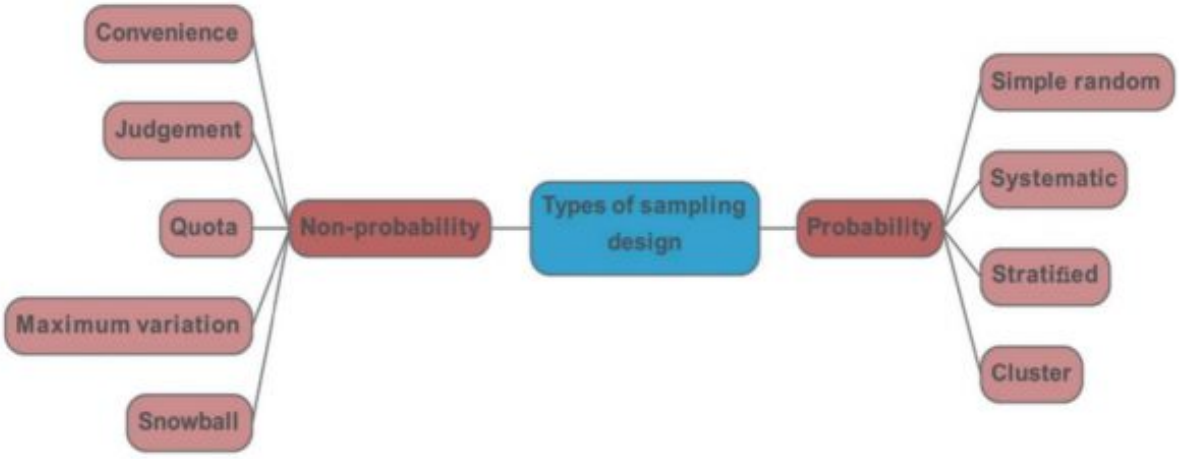
randomness of selection.

Mind map 4.2 below lists all the features of probability and non-probability sampling.



Mind map 4.2: Kinds of sampling

Mind map 4.3 below illustrates the different types of sampling design, followed by Mind map 4.4 illustrating.



Mind map 4.3: Types of sampling design

Probability sampling

Simple random sampling

- Each element in the population has an equal and independent chance of selection as part of the sample.

- There is no bias or predetermination in the selection process.

For instance, in simple random sampling, if the researcher decides to choose every fifth element in the sampling frame, that is, the actual list of the elements from which the sample is actually drawn, ideally the complete and correct list of population members only, then there is no independent randomness in the selection process.

The process of random sampling consists of four basic steps:

- Define of the population clearly
- List all members/elements of the population
- Number the elements of the population
- Select the sample, use an approach that guarantees randomness.

For the actual sample selection, use a table of random numbers or a computer program to generate samples. Often, simple random sampling is not practical as it requires a complete list of a population which is not always possible.

Systematic sampling

Systematic sampling is a method of probability sampling where the target from the larger population is chosen according to a random starting point but with fixed periodic interval.

- The interval is calculated= $\frac{\text{the population size}}{\text{the desired sample size}}$

Systematic sampling is one statistically valid alternative. In this approach element in the population is sampled, beginning with a random start of an element in the range of one. Systematic sampling is simpler than simple random sample; however, it may not be as exact as simple random sampling in the randomness and independence of the selection procedure.

Stratified sampling

It is desirable to select a sample to assure that all sub-groups represented in the population are in proportion to the sample, and match the profile of the population.

Essentially: the steps in stratified sampling would be as follows:

- Identify the various strata in terms of the variables of interests, for example, in the case of a school, it would be the principal, deputy principals, teaching staff and students.

- Separate the sample frameworks and establish each stratum with a list of all the elements/members who fall into a stratum.
- Each member in each group receives a number.
- The proportion of each group in relation to the total population is established and the number that will be selected from each stratum is calculated accordingly.
- Use a table of random numbers, the individual members are selected from each

- Use a table of random numbers, the individual members are selected from each stratum in terms of the required numbers.

Calculation of strata samples:

- How large the total should be, and
- The ratio by which the total sample should be allocated among the strata with both proportionate and disproportionate options available to the researcher.

Cluster sampling

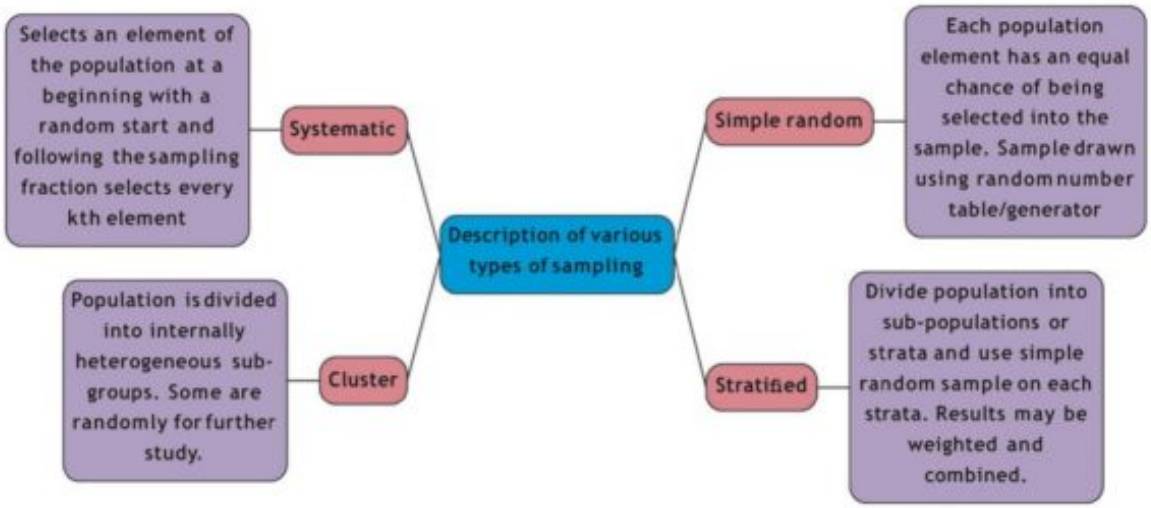
In cluster sampling, the sampling unit is not the individual component or member but rather a naturally occurring group of individual members. For instance, the researcher might examine teachers' responses to the executives amid the underlying phases of filling senior positions in school in Astana. It is not plausible to study or convenient to choose people from a wide scope of teachers' settings. It would, for instance, be either unrealistic or difficult to get a list of the theoretical population. In this situation, cluster sampling would be most practical and convenient:

- Division of population into groups of elements either geographically or by some other uniform criterion
- Random selection of groups.

In any case, it is most essential to stress that researcher should pick a cluster only when it is the most conservative and proficient regarding time and money and when it is essentially difficult to set up a solid examining frame of individual components.

The researcher must guarantee that the cluster has been productively characterised, then haphazardly select the required number of groups and afterwards continue with the suitable probability sample system. It is critical to stratify the sampling regularly in order to guarantee full inclusion of the number of strata in the number of population in each cluster.

A comparative summary of various types of sampling



Mind map 4.4: Various types of sampling

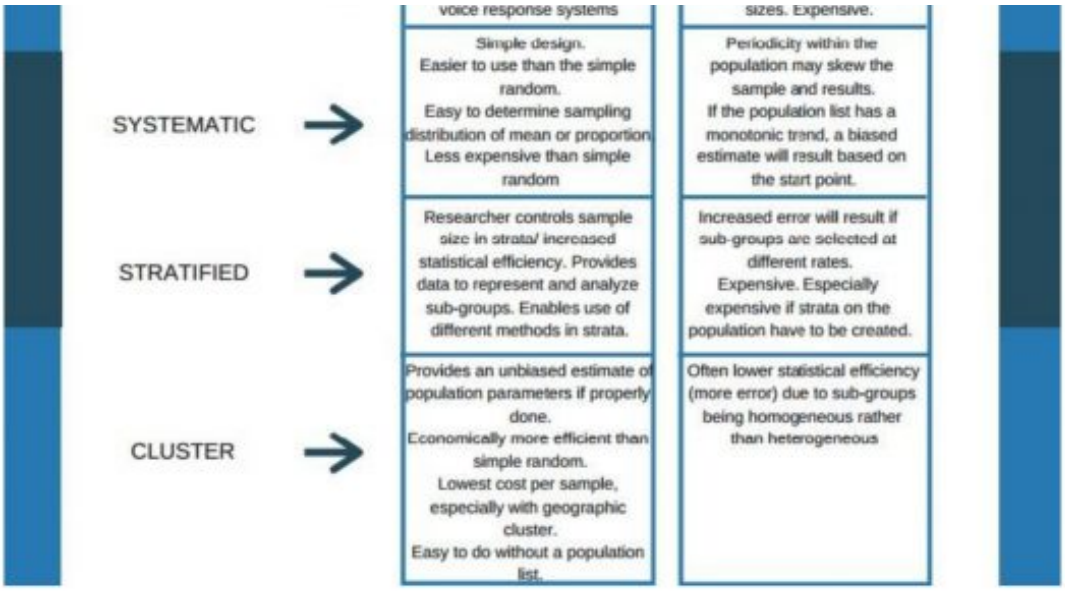


Figure 4.1: Merits and demerits of sampling

Non-probability sampling

Non-probability sampling is often the chosen route when the researcher, for instance, is undertaking an exploratory, qualitative study and does not have the objective of generalising the findings to the population from which the sample is drawn.

- With probability sampling, bias and subjectivity are reduced or eliminated through the random selection of elements.
- There is relatively high level of confidence that the sample is representative of the population from which it is drawn.
- The greater scope allows the researcher subjectivity in the constitution of the sample.

However, there is more a noteworthy 'open door' for the researcher who wants to influence

the sampling system and that is to contort the discoveries of the examination. Cost and time factors may likewise affect the decision of non-probability sampling as it requires cautious planning and a far-reaching definition in characterising the population and setting up the sampling outline

Convenience sampling

The researcher has the opportunity to pick whoever is accessible for consideration in the sample. Despite the fact that it is not a dependable research structure, convenience sampling is frequently the most effortless to establish and impact. Models incorporate the choice of companions and neighbours who are anything but difficult to find and helpful to survey. While the discoveries made from convenience sampling may not be exact and need unwavering quality, they might be helpful, for instance, in the exploratory systems. For the most part, this technique does not require much to recognise or legitimise it as a sampling strategy as it does not have a sound research ethic and legitimacy.

Judgmental sampling

Judgmental sampling is a type of a purposive sampling. Purposive sampling, thus, is a conventional term used to depict any sample intentionally picked by the specialist in accordance with predetermined non-probability criteria.

For instance, in an investigation of artificial intelligence trends, the specialist might need to meet just those with a genuinely wide involvement in the field. When it is used in the beginning of an exploratory or descriptive examination, it serves as a powerful time-proficient strategy.

Quota sampling

Quota sampling is another purposive approach available to the researcher. The study may require a sample of certain variables but for some valid reason proportional sampling is not possible. In this situation, quota sampling may be an appropriate choice to improve the representativeness of the study.

- The population is divided proportionately into predetermined categories.
- The subject category is deliberately selected from the population until a particular quota is met for each category.

Two basic conditions:

- Firstly, the categories should have a distribution in the population that can be estimated, and
- Secondly, the variable used in forming each category must be relevant to the topic of the study.

For example, in a study of the buying patterns of young executives working in the government institutions in Astana, the following categories can be identified for quota sampling:

- Gender: 2 categories – male, female
- Marital status: 3 categories – married, single, divorced
- Family social economic class: 3 categories – upper, middle, lower
- Educational qualification: 4 categories – postgraduates, undergraduates with diplomas, high school diploma, non-high school diploma.

From the combination above, the researcher will proceed to locate subjects who fall into each category in terms of an estimate of their occurrence in the population.

Maximum variation sampling

In this form of purposive sampling, the researcher identifies the categories of interest in relation to the research topic and then intentionally seeks out subjects or settings which will represent the greatest possible range of differences in the phenomena being studied.

Snowball sampling

In the initial stages of snowball sampling, individuals are identified using probability or non -probability methods. The group is then used to locate other subjects who possess similar characteristics who, in turn, direct researchers to yet other possible participant for the study.

Sampling error

Sampling error is the difference between the statistical characteristics of the sample and those of the population from which the sample was selected. The results are not likely to be identical to the population statistic. The larger the diversity of sample values, the larger the error and the less precise and representative the sample will be in relation to the population from which the sample was selected.

- The objective of good sampling is to ensure that the sampling error value is as low as possible.

Sample size

Sample size can be statistically calculated. However, the researcher can proceed without calculating a scientifically precise sample size. The researcher needs to be guided by the fact that a sample that is too small is not likely to be representative while one that is too large is likely to increase costs and time demands without producing significant benefits.

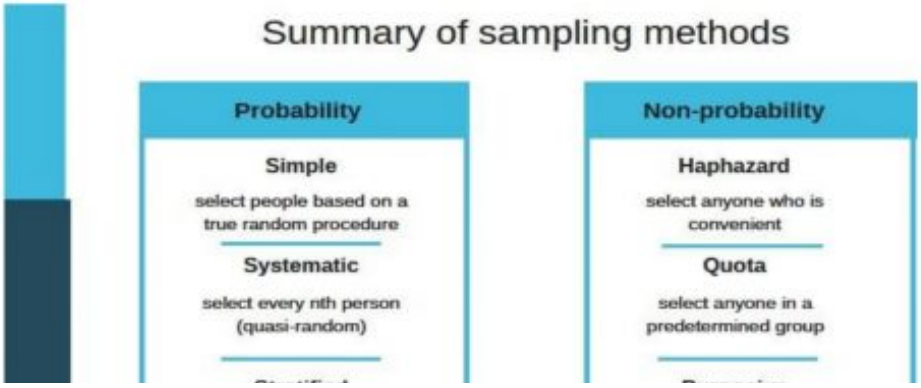
- Generally, a larger sample is advisable to ensure good respresentation.
- Sub group the sample into smaller units for analysis

As variability increases, it means that people/aspects in the sample are more diverse. This implies that more information is required to be representative of the sample.

It is very important that researchers should keep the following in mind when determining the size of their samples:

- In general, the larger the sample (within reason), the smaller the sampling error and the higher the representativeness of the sample.
- If the researcher wishes to discuss the influence of variables such as gender, age, and profession in the findings, then the initial selection of the sample must be large enough to enable the eventual creation of statistically sufficient numbers in each category or sub-sample .
- While a big sample is good, an appropriate-sized is better as it is more cost-effective in terms of time and money.

The following image is a convenient summary of the various sampling methods.



Stratified

randomly select people in pre-determined groups

Cluster

take multi-stage random samples in each of several levels

Purposive

select in a hard-to-find target population

Snowball

select people connected to one another

CHAPTER FIVE: DATA COLLECTION

Outcomes

By the end of the chapter, the learner will be able to:

- Identify the different primary and secondary data collection strategies
- Explain the appropriate use of questionnaires as data collection instruments
- Define the terms validity and reliability
- Classify and explain the purpose and types of research interview
- Describe the types of observations and their use in research
- Explain data collection procedure in ethnographic studies and case studies
- Discuss the concept of triangulation and its relevance to good research design.

INTRODUCTION

The entire research planning, design and literature review processes converge at the data collection stage. All the critical thinking is a preparation for the actual process of collecting primary data on the topic of the research. Additionally, the researcher must also have the data analysis plan established before planning data collection and data analysis requires clarity about:

- **The format of the research instruments**

The analyst must guarantee that all classifications of information necessary to examine the objectives are incorporated. In addition, there must be clarity about all aspects that the research instrument(s) need to analyse, how qualitative and quantitative items will be handled and analysed during the data analysis stage.

- **Identify appropriate statistical technique**

The researcher must have a full grasp of the particular statistical strategies that will be used to examine each segment of the exploration instruments. Should inferential statistics be required, the researcher must make sure they understand the procedures and the translation of the significant measurements.

- **Data layout and presentation**

The researcher must select the type of tables and graphics that will be used in presenting the data.

- **Pilot study**

The researcher must test the instruments with a small pilot group, inspecting the ease of use, accuracy and sufficiency of the information to be used in the actual research study. Anything that needs improvement can then be dealt with prior to commencing the study.

IMPLEMENTING THE PLAN

The data collection plan may not be implementable as a unique or perfect structure and therefore the researcher must be able to address unexpected possibilities. For example, if access to one of the groups is denied for some unexpected reason. It is thus necessary to have alternate courses of action for every conceivable challenge.

Interaction with participants in the study

The information-gathering plan must aim to encourage positive, informed interaction with the research participants. Prior to the data collection, all respondents are entitled to have all information about the investigation explained to them, including what is expected of them. The researcher must explain what the outcome of the results is for, so that the participant can decides if they want to participate in the research. Further, the researcher must guarantee tension free participation for the participants and that confidentiality will be maintained.

DATA COLLECTION METHODS

The specific research instrument that is most suitable for the topic should be stated during the research design stage.

The two most commonly used primary data collection methods are the questionnaire and the interview. All research is generally concerned with obtaining answers to questions.

Data collection instruments:

- Interview
- Questionnaire

The questionnaire and interview are data collection instruments that enable the researcher to pose questions to participants in search of information on the research topic. Each of these instruments has distinct features that enable the researcher to decide which is the correct and appropriate one for the specific data collection purpose.

Appropriate research context

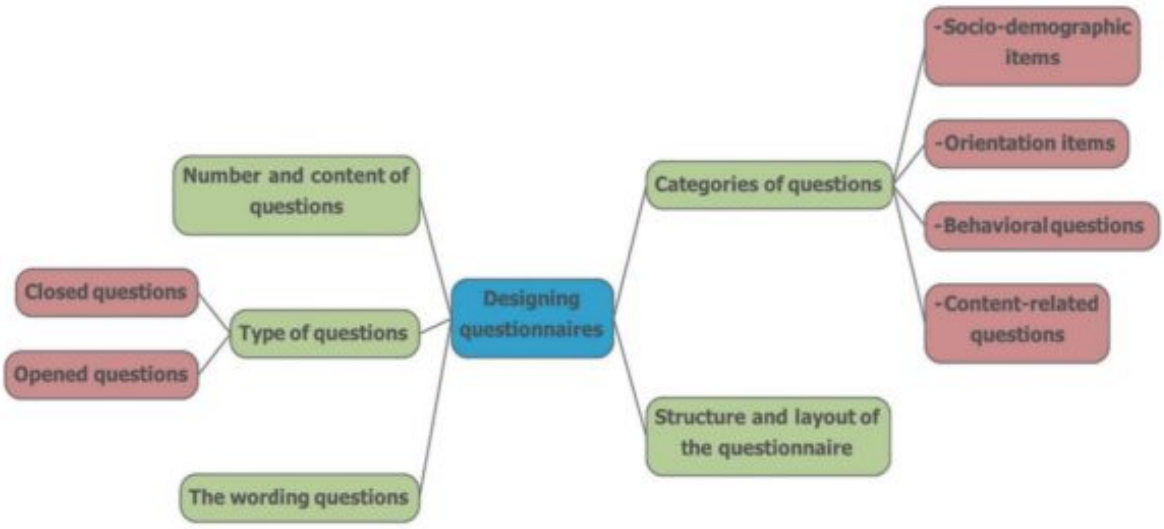
Questionnaires are most widely used in surveys with a descriptive or exploratory purpose. They can, however, also be effectively used in studies with experiment and case study research strategies. The appropriateness of questionnaires as research tools must however be carefully examined in the context of each study. Students sometimes fail to grasp that observation, semi-structured interviews and other data collection procedures may be more appropriate for their research objectives than questionnaires. Saunders et al. (2003:280) maintained that it is generally good practice not to rely solely on questionnaire data but to use the questionnaire in conjunction with at least one other data collection instrument. For example, a questionnaire designed to establish customers' attitudes can be complemented by in-depth interviews to explore and understand the basis of these attitudes.

Questionnaires

The questionnaire comprises various standardised questions designed to gather the data required. The questions serve to gather the data expected to test your theory. You need to give attention to the reliability of responses and the legitimacy of the discoveries/findings from the research instrument.

Questionnaire design

In designing questionnaires, there are five main issues that need attention, as discussed in the sections following Mind map 5.1 below:



Mind map 5.1: Designing questionnaires

1. Categories of questions

The questions included on the questionnaire should individually and collectively provide the data required for successful achievement of the research objectives. A well-constructed questionnaire also has a range of question categories, each consisting of small number of related questions, intended to elicit information of a particular type relating to the research topic.

- **Socio-demographic items** : to develop a "summary" of the respondent by asking questions about their gender, marital status, age group, occupation and related non-sensitive personal information.
- **Orientation items:** to familiarise the respondent with the core issues relating to the research and sometimes to test their level of knowledge of the topic.
- **Behavioural questions:** to measure attitudes, beliefs, opinions, motives and behaviours. Attitude questions record how respondents feel about something (their belief in something) and opinion questions record what respondents believe is true or false.
- **Content-related questions**: to elicit data on the major purpose and content of the research topic.

2. Number and content of questions

Most researchers tend to include too many questions in their questionnaires. This often arises from an incomplete analysis of the research objectives. Researchers should therefore have absolute clarity about their research objectives, and keep these in mind during the planning and design stage so that all the items on the questionnaire are relevant and have a clear purpose. Clear, concise and well-constructed questionnaires generally result in a better participant response rate.

3. Structure and layout of the questionnaire

3. Structure and layout of the questionnaire

This includes the researcher determining the numbers, question classifications and the kinds of inquiries. It is necessary to consider the genuine structure and format of the questionnaire and the succession of the questions. A few recommendations here are that the researcher should begin with comparable and recognisable 'introduction' questions, continue to 'content' and conduct questions and keep the individual, socio-demographic items for last and to word these cautiously to abstain from giving offense.

4. Type of questions

The following broad points are noteworthy:

- Closed questions that define the participant's range of responses to questions are better suited to questionnaires as they readily lend themselves to coding and to analysis.

- Questions should be designed to facilitate computer analysis as this allows for rapid computation, statistical analysis and graphical presentation of data.

Depending on the needs of the research topic and the range of data required for comprehensive coverage of the research objectives, the typical question formats include the following:

- Single-option responses ('yes', 'no' or short answers)

- Multiple choice responses (sets of options)
- Rating questions (using Likert scales, for example)
- Ranking questions (ranking set of options).

5. The wording questions

Clear correspondence should be an essential objective of all questionnaires. The researcher should avoid wording that gives rise to misconception, proposes analyst predisposition, or is offensive. The following are a few suggestions for the wording of questions.

Suggestions

1. Avoid open-ended questions:

If necessary, categorise the questions into discrete groups. For example, the question:

- What do you think are the reasons for racism in football?

These sorts of questions may create an entire scope of answers of varying length and articulation. If the researcher is keen on making extremely exact decisions about every individual respondent, this likely could be valuable.

2. Plan to computerise analysis

It is effective to compute all the results as soon as possible because the responses from the participants will still be fresh in your mind as a researcher.

3. Keep answers mutually exclusive

When designing questions for a single answer, make sure you have just one answer. For example, if the following question is asked?

How do you travel to work?

A different number of replies from each respondent may be expected.

Phrasing the question as "What is your most usual means of traveling to work?" will certainly help but may not include all the information needed. The respondent should be allowed to select a combination of answers to what is in fact a series of independent dichotomous yes/no questions

4. Ranked replies

A useful way to ask an ordering set of options may be to demand a numerical ordering from 1 to the maximum number you are interested in.

For example, to a question like:

Place in order of importance the following features of a camping holiday (indicate by numbering from 1-5 in order of importance)

Open air

Mobility

Cost

People

Atmosphere

5. Avoid dual questions

Do you think the Kazakhs should eat less and exercise more?

Instead, ask:

	Yes	No
Do you think Kazakh's should eat less?	1	2
Do you think Kazakh's should exercise more?	1	2

6. Avoid asking questions involving negatives

Do not confuse the respondent by language such as this:

	Yes	No
Are you against a ban on smoking?	1	2

Confusion leads to errors!

Instead a better wording would, do you support a ban on smoking?

7. Getting the maximum response

The researcher cannot always expect the respondent to have the same concern for the greater good. The following two main considerations must be made when asking a person to give up some time to help the research:

- Firstly the researcher must allow for privacy and not ask questions which may offend.
- Secondly, especially if there is a need to ask some personally searching questions, it

helps to explain the reason for the research to the respondent, both at the beginning and during completion of the questionnaire.

8. Explain the purpose of the questionnaire

The researcher must clarify the reason for the survey to the participants before they answer the questionnaire and should include a covering letter with the questionnaire which also explains the reasons for the study. In addition, the survey itself should have an opening segment that clarifies the essential point of the examination and the significance of the participants' involvement in the study.

Pilot testing

Before administering the questionnaire to members in the examination, the analyst must test it on a small sample. The analysis of the pilot survey will reveal flaws in certain questions.. Moreover, the pilot study empowers the researcher to do the following:

- Make amendments necessary to maximize returns and minimize the error rate of answers
- Categorise the open-ended questions effectively
- Perform the analysis on the pilot sample, test all the computational procedures and produce some initial hypothesis

- Evaluate the adequacy of the data for the research questions.

Validity and reliability

Validity addresses the issue of whether the researcher is actually measuring what they set out to do. There are four types of validity – each of which the researcher would ideally want to establish for the research instrument prior to administering it for the actual study. These four types are listed in Figure 5.1 below.

Reliability of a research instrument refers to the consistency or repeatability of the components of reliability. There are three types of reliability, as listed in Figure 5.2.

Interviews

Interviews and questionnaires are two of the most widely used primary data collection methods. Questionnaires have been dealt with in detail in the previous sections. The interview is a form of data collection that is very common in descriptive research such as surveys, and can be use to collect valid and reliable data in other types of research. In contrast to questionnaires, interviews generally tend to:

- Make greater use of open-ended questions
- Are associated more with qualitative, phenomenological-oriented research
- Make use of small, deliberately selected purposive samples.

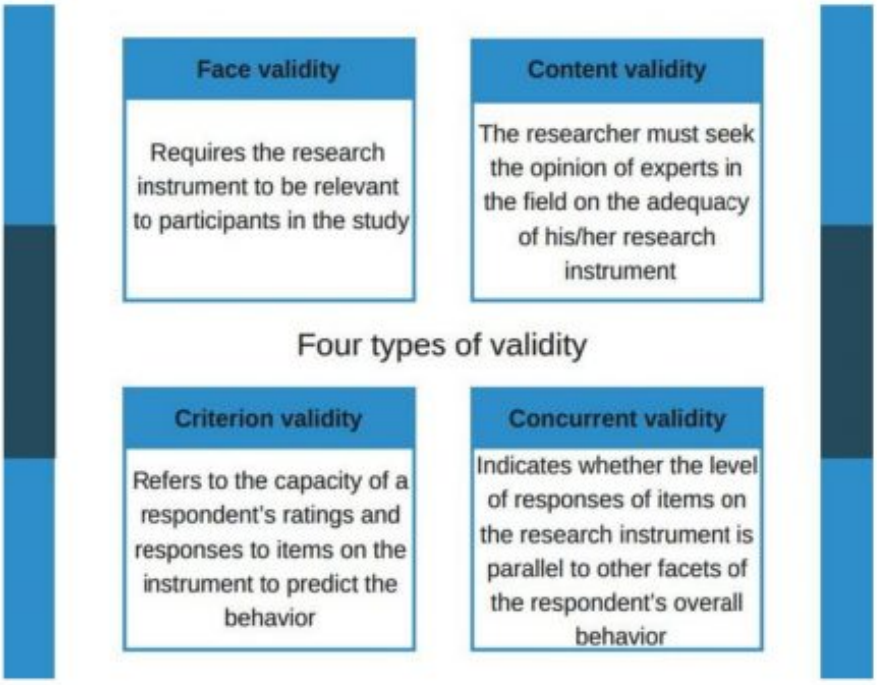


Figure 5.1: Types of validity

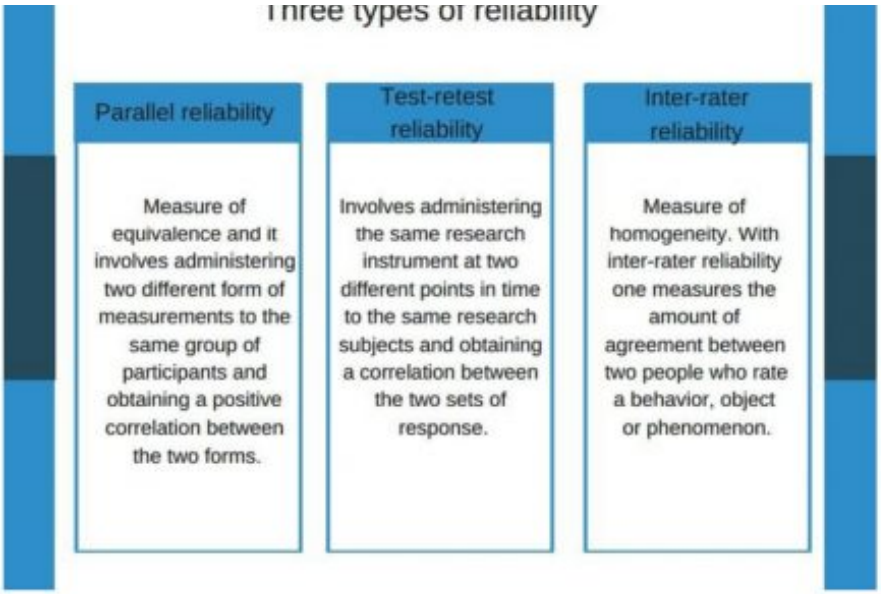


Figure 5.2: Types of reliability

Each type of interview has a different purpose:

- Highly structured and structured interviews may be used in surveys and be processed quantitavely.
- In contrast, semi-structured and unstructured interviews are essentially qualitative, phenomenological-oriented data collection methods. They enable exploratory discussion that help the researcher to understand the what and the how but also to grasp and explore the internal dynamics of the research topic.

The different kinds of interviews can be used in a solitary study to expand the reliability of the findings. For example, in-depth, instructed interviews might be used in the underlying phases of the examination to distinguish subjects and factors. This information could then be used to plan a questionnaire or a structured interview to look at explicit subjects and the cooperation of explicit factors.

In addition, in the second phase of a quantitative questionnaire, semi-organised or unstructured interviews might be used to investigate and to approve the discoveries from the questionnaire.

Design of interview

Most interviews include composed content or some likeness thereof with differing dimensions of adaptability structured into the interview plan (the organisation, composed posting of the inquiries or subjects). In an exceptionally organised interview, the plan of the meeting would be fundamentally the same as that of questions. The unstructured open-ended interview, on the other hand, would have no schedule of questions at all. Furthermore, semi-structured interview schedules would consist of some closed questions with the interviewer having the freedom to ask the participant to provide more details, as well as a test of open-ended questions and themes for discourse.

Conducting the interview

The subjects or participants are chosen for their experience and specialist background to establish a purposive sample. Interviews do not require large samples. In the interaction with the subjects in the sample, the interviewer should avoid the common pitfalls in the interview that might affect the reliability and validity of the findings.

The following should be avoided during the interview:

- Agreeing or disagreeing with the subject
- Suggesting answers
- Displaying bias or prejudice
- 'Leading' the subject
- Being in any way judgmental

- Lapsing into general conversation.

In addition, interviewers should use an appropriate dress code and create a conducive climate before commencing with the interview.

Recording the interview data

Recording the interview data

Generally, it is not appropriate to make notes as the interview is in a process as this is not only distracting to the participants, but disrupts the flow of the interview. The researcher may also give the subject clues about points of importance and so influence the subject's later responses.

- More appropriately, the interviewer should use a tape recorder, phone recorder (with the subject's content)
- Use an accompanying note-taker
- Make the relevant notes as soon as possible after the interview.

In summary, the interview is an excellent technique for gathering certain kinds of research information. However, because of its subjectivity, there are as noted before, many potential sources of bias.

Observation

General characteristics

An observation involves systematic observing, recording, description, analysis and interpretation of people's behaviour. There are numerous positive viewpoints to observational research. Perceptions are normally adaptable, empowering the researcher to assemble a wide scope of information for an assortment of research destinations. For instance, before attempting more structured research, a researcher may lead observations to frame an exploration question. Regarding validity, observational research discoveries are seen as effective because the researcher can gather in-depth data about a specific phenomenon. Reliability and generalisability of discoveries, notwithstanding, are not similarly high. In observational research, the discoveries are often identified with a unique population and in this way not fully appropriate to the bigger population. Nonetheless, observations are a profitable instrument for research.

Appropriate use of observation

As indicated above, observation can in conjunction with other data collection methods increase the reliability of the study.

Some points to note when deciding on the use of observation as a research tool:

- Sensitivity of the topic

Now and then members are hesitant to respond to inquiries concerning sensitive issues. For instance, if the researcher aims to investigate gender prejudice among staff, numerous individuals would be hesitant to uncover the reality about their perspectives and attitudes. Rather, the researcher should observe staff communication in a big organisation. In this case, observations are probably going to help with grouping precise information. Hence, delicate social issues are better drawn with observational research.

- Observation of the phenomena

The researcher must determine what is applicable to the study. For instance, you cannot see attitudes but you can observe behaviours and make inferences about attitudes. It is important to bear in mind that questions regarding sexual conduct can be better accommodated with the guide of a survey questionnaire that gives members anonymity.

- Available time resources

Observational research is tedious. In order to obtain total reliability, behaviours must be

Observational research is tedious. In order to obtain total reliability, behaviours must be watched a few times over an undefined period of time. Further, the participants may over time get used to the observer's/researcher's presence and act more normally.

Research clarity and gaining insight through observation

Frequently, the analyst may start with the area of intrigue yet not have full clarity on the theme and the exploration questions. Observation for an undefined period may recommend a hypothesis and a theory testing technique. These perceptions become hypotheses once they are repeated.

Types of observations

Participant observation

As with interviews, there are two broad categories of observation – participant observation and structured observation. Saunders et al. (2003:224) classified the researcher roles in participant observation in terms of the researcher's involvement in the activity being investigated and the subjects' awareness of the researcher's/observer's presence.

The roles of participant and researcher/observer require the researcher to conceal their identity and research preoccupation.

- The advantage is that the research participant does not modify their behavior as a reactive response to an external agent.
- They act naturally and spontaneously because they do not know that they are being observed. There are ethical issues in this form of data gathering because there is deception of the subjects.

In contrast, the researcher/observer as member jobs involves the analyst uncovering the exploration destinations to participants. While there is the threat that they may respond to the researcher's presence by not being honest, they may well share their sentiments.

Structured observation

Like structured interviews, structured observation is efficient with a predetermined convention for perception and obviously characterised criteria for categories and structures. The goal is to measure the observed behaviour. The procedure fundamentally includes building up the clear, noticeable certainties and grouping information to meet the examination objectives.

Observational variables

In both participant and structured observation, the researcher has to know what they are observing and how to interpret the observations.

Three categories of data of participant observation.

- **Primary observations:** relate to observations of what is said and done. The researcher may use diaries to record this data.
- **Secondary observations:** relate to statements by observers of what is said or done.
- **Experiential data:** records the perception and feeling in the course of observing phenomena. Diaries are used to record this data.

The critical issue in the choice of any data gathering technique is that it must effectively meet the demands of the research objectives. This is also true of observational data collection techniques. It is also important, as with other data collection strategies, that the researcher should start with understanding how they are going to interpret the observations.

The data may be categorised into three-analysis perspectives:

- **Descriptive** observational data which requires no inference making on the part of the researcher: the see something and write it down.
- **Inferential** data requires the researcher to make inferences about the underlying emotion of what is observed. For instance, if the researcher observes a manager consistently visiting the staff offices, five minutes before closing time for a day, the researcher may conclude an instructive fault-finding style of management.
- **Evaluate** observational data requires the researcher to make an inference and a judgment from the observed behavior.

The observation collection methods are illustrated in Mind map 5.2.

Mind map 5.2: Observation collection methods

- **Continuous monitoring** involves observing a subject and recording (either manually, electronically, or both) as much of their behavior as possible. It is relatively easy but a time consuming endeavour.
- **Time allocation** involves the researcher randomly selecting a place and time and then recording what people are doing when they are first seen and before they see the researcher. There are several sampling problems with this approach. Firstly, the researcher needs a large representative sample for generalisation. Secondly, for questions such as when, how often, and where the researcher needs to observe the subject(s) which is often a concern.
- **Narrative logbooks** involves the researcher maintaining a descriptive and/or narrative account of their observations. The diaries, however, must not only record description and narrative accounts but interpretations and evaluations and develop a framework of theory that will help in understanding the underlying dynamics of the business phenomena.
- **Coding schedules** are used in structured observation to record the nature and frequency of defined categories of behavior in the research context. The coding scheduled is often for recording inter-personal interactions in social situations such as meetings or negotiations.

Appropriate use of observational procedure

In evaluating the appropriate use of observational procedures in any study, the researcher should examine the research in terms of the following criteria:

- Was a full range of behavioral variables identified to permit description?
- What were the inferences and evaluations of behaviors and inter-related patterns of actions?
- Was the observer trained to identify the variables being observed?

- Was the observer trained in the maintenance of diaries, records, and coding schedules?
- If there were more than one observer, what was the inter-observer reliability of the data, that is, what was the level of agreement between the observations of independent observers?
- What was the duration of observation as observations must aim at a representative sample of the behavior of individuals being observed?
- Was the period too short to permit sufficient observation of the entire research situation?
- How time consuming, obtrusive and directive were the role of the observer?
- Did the researcher describe the observational situation and present an estimate of the possible effects of their presence as a participant-observer?

ETHNOGRAPHIC STUDIES

Ethnography involves a systematic, extended observation of social groups to gain inside information of the phenomenon. Ethnographic studies are characterised by all or many of the following features:

- They are broadly qualitative, phenomenologically orientated
- Participant-observation is often of a concealed, convert, unobtrusive variety
- The researcher's adoption of the participants' worldview and frame of reference
- Use by the researcher of the participants' communication and the special meaning and significance they attach to ordinary words and phrases
- The researcher's effort to define and dramatise the group's sense of its own identity and uniqueness as a group
- Presentation of detailed accounts for specific situations from a narrative, descriptive

and inferential perspective

- A complex interweaving of the events and the wider social context within which they are located.

Ethnographic investigations do not start with a well organised research plan. The researcher is commonly open to observing, assessing and interpreting the much unforeseen conduct and events. The board focal point of research interest that advances as the member - perception process unfolds.

CASE STUDIES

The case study generally involves an in-depth study of a phenomenon with reference to a particular "case" or "cases". It is usually an exploration of a phenomenon or question of interest where there is little knowledge in advance and where the situation may be complex and has to draw on multiple sources of information, and tell a story, usually in a chronological order (Yin 2009).

In case studies:

- The researcher can create a rich description of a social process
- The operation of an organisation.

This sets the stage for more specific questions that might be probed later using more tightly structured methods.

Mind map 5.3 below illustrates the many aspects of the case study.

Use of case study methodology

Five distinct types of case studies:

i) **Exploratory case studies** are undertaken in few research studies or in new areas with only a few existing theories or a deficient body of knowledge.

ii) **Descriptive case studies** limit themselves to a description of current operations in an organisation or the research situation.

iii) **Illustrative case studies** attempt to illustrate new and possibly innovative practices adopted by practical companies.

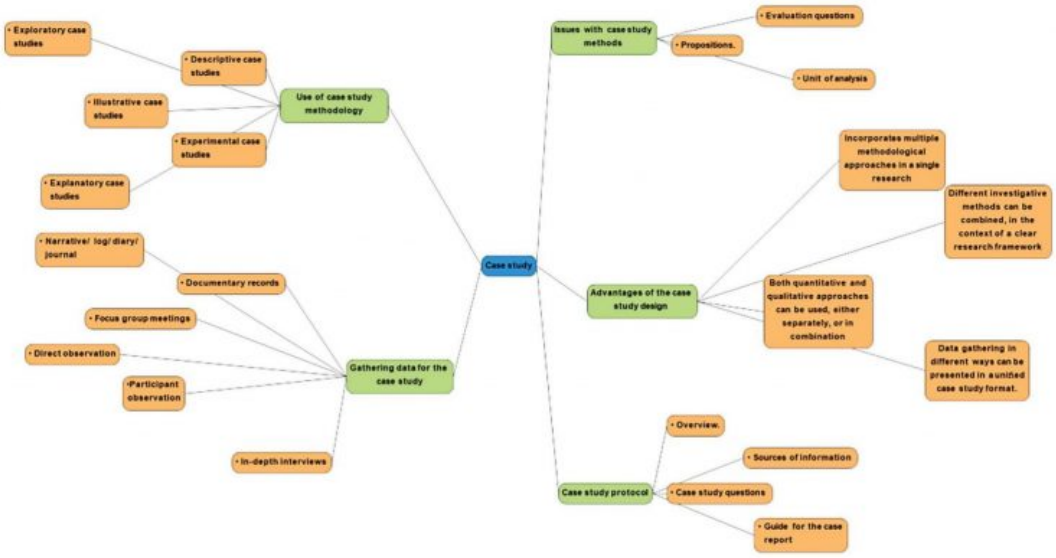
iv) **Experimental case studies** examine the processes and problems in implementing new procedures and techniques in an organisation and evaluating the outcomes.

v) **Explanatory case studies** use existing theory to understand and explain events and practices within the observational context.

Within this typology of case studies, there are two broad categories –

- The single case study design
- The multiple case study design.

The former is frequently used in quantitative studies. Multiple case study designs are widely used in both qualitative and quantitative research and have the advantage that they allow the researcher to compare and contrast aspects of the phenomenon of the research interest in different contexts.



Mind map 5.3: Case study

Problems with case study methods

The case study, like all social research, should be clearly designed to facilitate the data collection stage. From the start, the researcher should pay attention to the following:

- Evaluation questions

The researcher should have a clear sense of what to examine in the research process, with the variables of interest clearly defined.

- Propositions

The researcher must have clear guide of the considerable number of things that should be looked at within the scope of the examination. Expectations should address aspects of the examination that are applicable to the current inquiry. Propositions should guide the researcher on what to search for that is critical, and where that data can be found.

- Unit of analysis

This alludes to the dimension at which the contextual analysis is focused. The unit of examination has to be controlled by the exploration question and accessibility of time and different assets. The researcher may go past the unit of analysis to build up a progressively detailed presentation of the case study.

Advantages of the case study design

In general, a number of benefits accrue from the use of case study design. Perhaps the most compelling are the following:

- It can incorporate multiple methodological approaches in a single research.
- There can be triangulation of methodologies: different investigative methods can be combined in the context of a clear research framework.
- Similarly, quantitative and qualitative approaches can be used either separately, or in combination. The case study is a way of presenting data more than it is a data gathering technique.
- Data gathering can take place in different ways in a unified case study format.

Gathering data for the case study

To increase the reliability and validity of the study, it is generally imperative to use multiple sources of data.

Possible data gathering techniques are:

- Narrative/ log/ diary/ journal
- Documentary records
- Focus group meetings
- In-depth interviews
- Direct observation
- Participant observation.

Information should be stored in such manner that the raw information, field notes about information and different reports of the researcher are stored and maintained in legitimate databases. A chain of proof should be kept in which the researcher's rationale and report can inform the reader of steps taken from introductory suggestions to definite revealing of information. Very important about data accumulation are the original study questions and intentions.

Developing a case study protocol

In the design stage, the researcher should build up a far-reaching contextual analysis convention. The protocol acts as a manual from the underlying phases of the examination

convention. The protocol acts as a manual from the underlying phases of the examination to its completion. The protocol as a rule incorporates the accompanying:

- **Overview:** Includes project objectives, case study issues, propositions and relevant readings.
- **Sources of information:** Include locations for information and general procedures.
- **Case study questions :** The question for the case study
- **Guide for the case report:** Include an outline, narrative format and any bibliographic or background literature.

The inquiries concerning which sort of information gathering technique is the best are actually misleading. The main issue is to decide on the suitable data collection method/ strategy which should be based on the research goals. In addition, it is recommended that researchers make use of different strategies to expand the reliability and legitimacy of their discoveries through a methodology normally referred to as triangulation.

The essence of triangulation is that different strategies are utilised in a parallel sense, so that they provide overlapping information, making it conceivable to check results from more than one perspective.

Figure 5.4 below lists the aspect of the four types of triangulation.

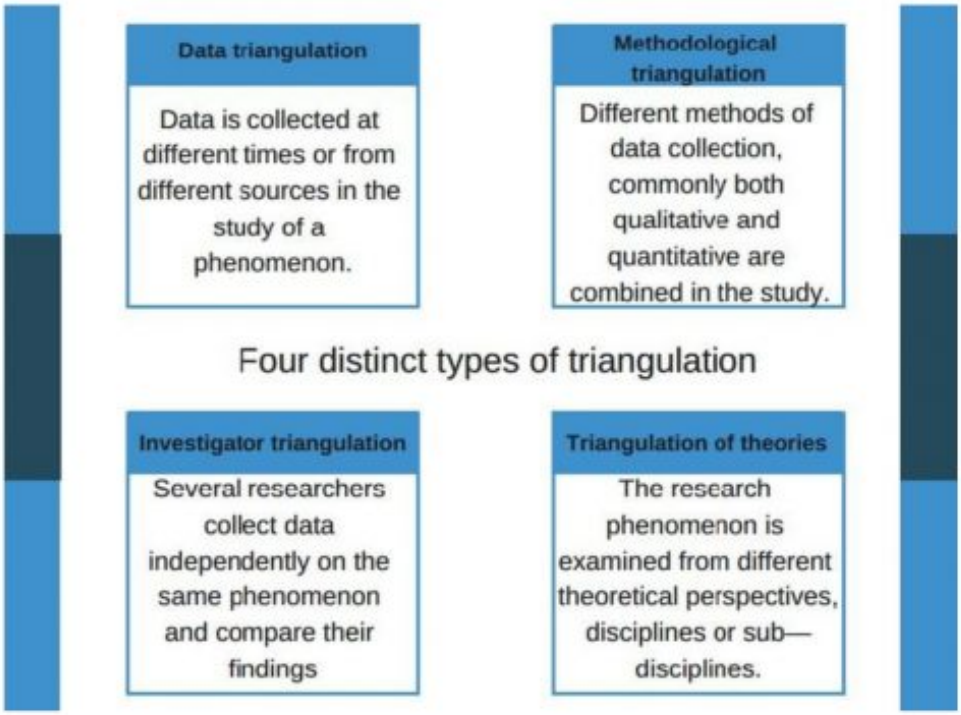


Figure 5.4: Types of triangulation

The structured interview

- Interviewer asks questions and respondent answers most of the time.
- Only the participants reveal feelings and opinions.
- Interviewer is non-judgmental and does not try to change respondent's opinions or beliefs.
- Interviewer tries to obtain direct answers to specific questions.
- Interviewer seeks genuine answers, not ritual responses.
- Participants provide almost all the information. Interviewer does not correct a respondent's factual errors.
- Interviewer should control the topic, direction and pace. Interviewer must keep the respondent's attention on the task and ensure that irrelevant diversions are contained.
- Interviewer should attempt to maintain a consistently warm but serious and objective

tone throughout.

- Respondent should not shirk questions and should give truthful and considerate answers.

Unstructured interviews

In unstructured interviews, the interviewer should keep to the previously formulated questions contained in the interview schedule to prevent different interviewers from collecting information that is not comparable.

- Unstructured interviews allow room for revealing feelings and beliefs of individuals that a structured interview does not allow.
- The interviewer in unstructured meetings just proposes the general topic of discourse.
- Interviewer offers conversation starters to ensure a comfortable atmosphere for the interview.

Face-to-face interviews

The face-to-face interview is a data collection method where the researcher communicates directly with the participants in accordance with the research questionnaires. Face-to-face interviews have the highest response rates and permit the longest questionnaires.

- The researcher/interviewer can make notes on the context (surroundings) of the interview
- Use gestures
- Use other nonverbal communication methods and visual aids like pictures
- The researcher can ask complex questions and can make use of probing questions if the initial question does not yield an answer.

However, the disadvantages of this type of interview are:

- The costs can be high.
- Interviewer bias often exists in face-to-face interviews.
- Researcher may influence the interviewee by means of appearance, tone of voice, and wording of the questions.

Telephone interviews

The researcher/interviewer calls a subject telephonically, asks questions and records the answers.

- The researcher can quickly reach many respondents, even those across long distances.
- The response rates can also be high and you can use many interviewers.

- The researcher can control the sequence of questions and can also ask probing questions.

The disadvantages are:

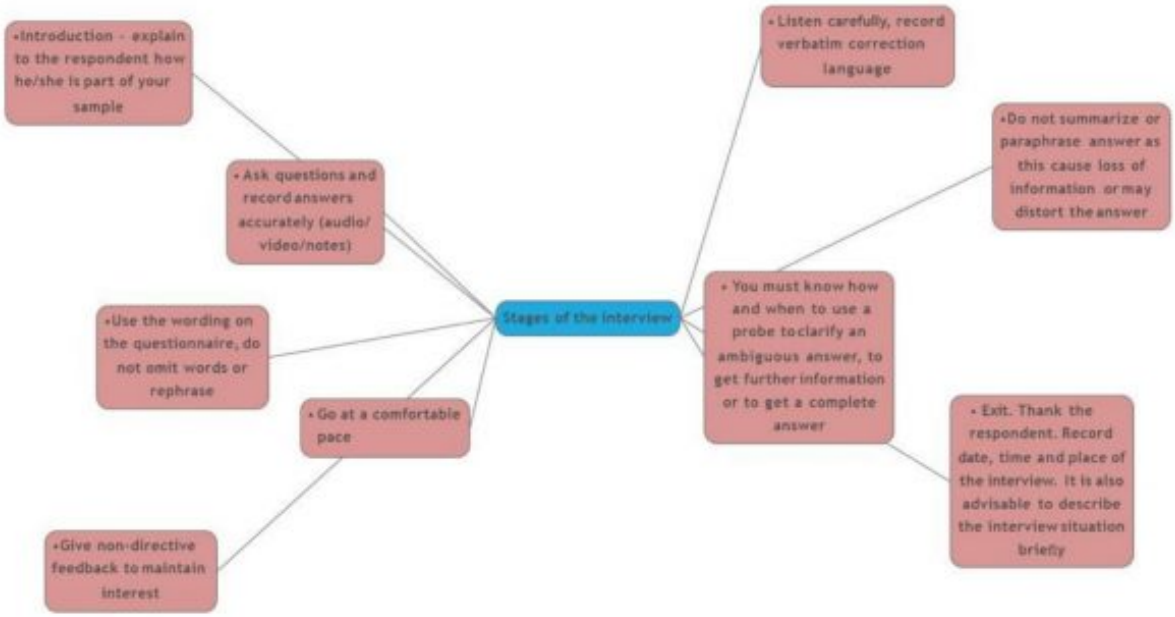
- They are very costly.
- Length of the interview is limited.
- Participants without telephones are excluded.
- The time of the call may be inconvenient for the interviewee.
- Open-ended questions are difficult to use.
- The researcher cannot assess the surroundings of the interviewee.

The role of the interviewer

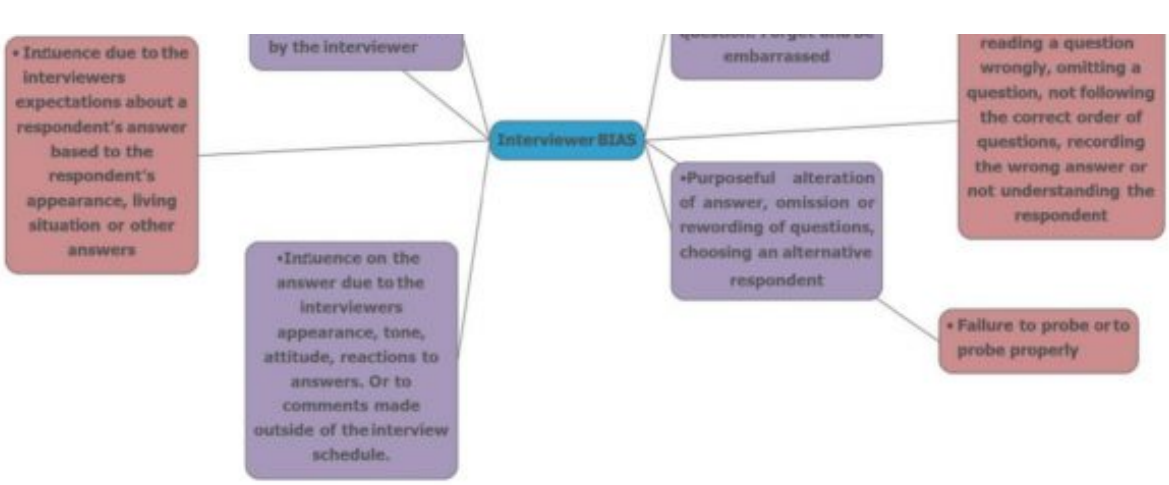
- The interviewer's role is difficult. As a specialist of the study, you need to get answers to your questions and build rapport with the respondent, yet remaining neutral and objective.
- You encroach on the respondent's time and privacy and your research may not benefit the respondent – so you need to be considerate and polite all the time.
- The respondent may be uncomfortable, afraid, embarrassed and suspicious of you and the questions – again, you need to be considerate and polite all the time.
- You need to help the participant feel that they can give any truthful answer.
- You may not reveal your opinion, verbally or nonverbally.

- Treat the participant's answers in a matter-of-fact manner and retain ethical standards.
- The respondent may deviate from the question and you need to re-direct the response to the question.
- You need to define the situation, ensure that respondents have the information, and understand it.
- Ensure motivation and cooperation so that the respondent seriously considers your questions.

Mind map 5.4 below shows all the stages of an interview. This is followed by Mind map 5.5 showing the possibilities of interviewer bias.



Mind map 5.4: Stages of an interview

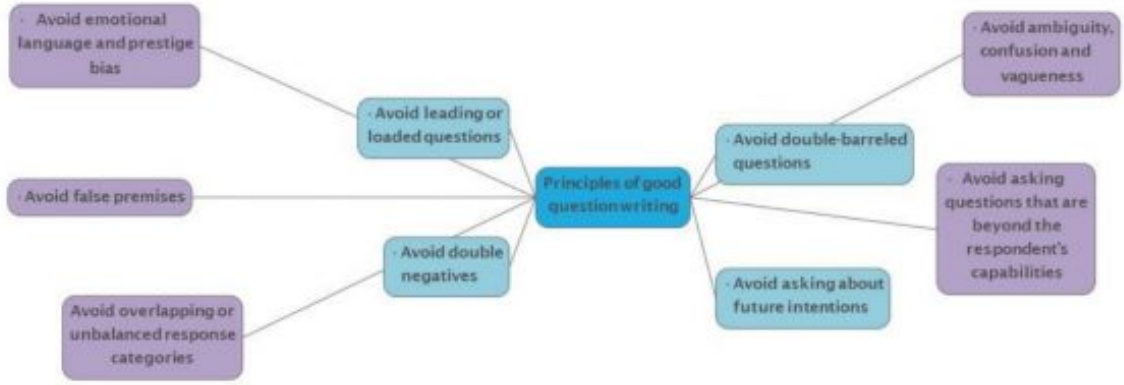


Mind map 5.5: Interviewer bias

Questionnaires

- Ensure the following:
- The questions are relevant to the study.
- The questions are carefully worded.
- The respondents understand the questions.
- The respondents are not influenced by the wording.

Mind map 5.6 below shows the various principles of good question writing, followed by a short discussion of each principle.



Mind map 5.6: Principles of good question writing

- Avoid jargon, slang and abbreviations

The questions must be clear, relevant and significant to all respondents. Language and specialised terms may bode well to specific subcultures only. For example, educationalists use the terms didactics and pedagogics while legal advisors use phrasing like in camera and subpoena. Shortened forms like USA and GPPW may mean nothing to many respondents. The vocabulary and sentence structure for the overall population should be easy to understand.

- Avoid ambiguity, confusion and vagueness

Ambiguity is one of the common problems in questionnaires. For example, an answer to the question. Do you do your homework regularly? This question hinges on the understanding

of the word regularity. Respondents may respond differently to the question. To reduce confusion and get information for the study, such types of questions should be closed (provide options) with a question like how many hours per day do you spend on your homework?

Do not make assumptions that your respondent will understand your question. For example, the question, "What is your income?", can have a variety of understandings – it could mean gross or net, annual or monthly, only from salary or all sources of income, etc. The answers would be inconsistent and the validity of the findings can be questioned. Make sure to specify exactly what answer you expect, e.g. in the case of income you may want monthly gross family income.

- Avoid prestige bias and emotional language

Prestige bias is an associated statement with a prestigious person or group and the researcher must avoid it. Respondents may be influenced by their feelings towards the person or group rather than the issue. For example, President Trump has branded media news as fake news. Do you agree? The respondent may be influenced by people's support for President Trump. Respondents who do not understand the issue may answer or be

biased in their view of the President.

Use neutral language instead of emotionally burdened words because respondents may respond to the emotional words instead of the issue.

- Avoid double-barrelled questions

Each question must address only one concept, meaning or issue. When two or more question are joined together, the question becomes double-barrelled. Such questions are ambiguous and confuse the respondents. The researcher will also struggle to be certain of the respondent's intention. An example of a double-barrelled question is does your organisation address the problems associated with gender and equality in your workstation? The participant may have different answers to the issues equality and gender at their organisation.

- Avoid leading questions

A leading or loaded question leads the respondent to choose a particular response by its wording, e.g. you do not agree with racism in the media, do you? Respondents are led to state that they do not agree with racism in the media.

- Avoid asking questions that are beyond the respondent's capabilities

A few difficult responses would include remembering past details, specific factual knowledge and answers that expect mathematical skills. The researcher will get poor quality responses if many of the respondents are unable to answer the question.

For instance, asking an adult: "How did you feel towards your grade 11teacher in high school?" Questions like this may lead to a guess which is not reliable.

- Avoid false premises

The winter days is very long. Do you think schools should open around 9am in the morning, or should the school close an hour earlier? The respondent may either accept or reject the premise or not agree with either of the choices. Respondents who do not agree with the

premise may get frustrated and they will not know how to answer. The question should rather assume a premise is true.

- Avoid asking about future intentions

Asking questions about what people may do when placed in hypothetical situations is not reliable because it is not easy to predict behaviour. Questions on current issues, experiences and recent behaviour are answered more reliably than questions about future behaviour and abstractions.

- Avoid double negatives

Double negatives are grammatically incorrect and confusing. The double negative generally arises when respondents are asked to agree or disagree with statements. For example, when respondents disagree with the statement, "Students are not required to attend conferences during working hours", they can disagree with not doing something.

- Avoid overlapping

Often in numerical ranges one finds overlapping. A question on age with the numerical ranges (20-30, 30-40, 40-50, 50+) is confusing and should be corrected to (20-29, 30-39, 40-49, 50+). Overlapping can also arise in verbal choices, for instance, "Are you satisfied with the requirement for admission into the university or are there things that you feel should be changed?"

Open and closed questions

Open questions:

Participants answer in their own words, no alternatives are given, thoughts and feelings are revealed and the participants give reasons for their answers.

For instance, "Did exposure influence your stay in Astana? If yes, how?".

One of the disadvantages of open questions is that they are difficult to interpret, tabulate and summarise in research findings.

Closed questions

The most common closed question is the Yes/No option as it is easy to fill answer. If alternatives are given, it confuses the participants.

Question format examples

Example of horizontal vertical response choices:

Do you think that there is evidence of female racism in sports?

The table below is an example of a matrix question format:

The doctors gave prescriptions	Strongly agree	Agree	Disagree	Strongly disagree	Don't know

Some examples of response choices:

- Excellent, good, fair, poor
- Strongly approve, approve, strongly disapprove, and disapprove
- Very interested, interested, not interested.

Scaled items or Likert scales:

The closed question describes various degrees of something. It enables people to get accurate assessment of beliefs or opinions with Likert type questions.

Examples:

Female education is important

Critical	Very important	Undecided	Disagree	Strongly disagree

Guidelines for an effective questionnaire

- Participants should not be asked to identify themselves in questionnaires (they should remain anonymous).
- Responses from participants should remain confidential in order to encourage frank answers to sensitive questions in the study.
- Target only those respondents to whom your study is applicable.
- Neatness and conciseness are important in questionnaires to avoid confusion.
- The questionnaire must be attractive and easy for respondents to deal with.
- Time and simplicity are key issues.
- Plan carefully and only relevant questions must be included. Present an attractive questionnaire to ensure that respondents accept it and that they will answer the questions.

- The questionnaire should be comprehensive. It must gather as much information as possible.
- Clear instructions. For instance, how the respondents should answer the questions (ring, cross or tick the choice). The respondent should know that is expected of him/her.
- Questions should move from the general to the specific. The first few questions can win or lose their favour. Keep the delicate or sensitive questions for the end. The questionnaire should be presented in a respondent-friendly way.
- Questions should be categorised if you have different variables (e.g. questions on dress, identity, culture, language etc.). This will help to guide the respondent's thinking.
- Questions should also be sequenced logically.
- Responses should be easy to tabulate, summarise and interpret.
- Make provision for adequate code numbers if you intend using a computer program to process your data.
- Enclose a post-paid envelope outlining the objectives of the study as well as a few courteous words to encourage respondents.
- Give attention to the response rate. The response rate ultimately affects the completeness of the sample. Each respondent who refuses to participate has an impact on the representativeness of the eventual sample.

Factors affecting the validity of a questionnaire

The researchers needs to ask themselves the following:

- To what extent do the questions influence respondents to portray themselves in a good light?
- To what extent does a question influence respondents to react in a way that they think the researcher wants them to?
- To what extent does a question ask for information that could elicit resistance from the person?

It is important for the researcher to avoid any of the above happening as this will have a negative effect on the validity of the questionnaire.

CHAPTER SIX: DATA ANALYSIS

Outcomes

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

- Identify appropriate methods in planning the data analysis research
- Define the different types of data
- Identify the data analysis implications of each form of data
- Justify appropriate approaches in the analysis of quantitate and qualitative data
- Be aware of computer-assisted methods of data analysis.

INTRODUCTION

Research incorporates the formal and casual procedure of picking up, using and efficiently applying information to the area of interest. The objective is to establish a connection between what one knows and what one finds out about a research problem through an audit of relevant literature and assembling essential information from people and the different components of both quantitative and qualitative research strategies.

The process of information gathering and data analysis go hand-to-hand. If the exploration has a positivistic inclination, then the data collection and the data analysis strategies will in all likelihood be quantitative. If the investigation situates in a phenomenological worldview, both the data collection and data analysis techniques will in general be qualitative.

THE QUANTITATIVE DATA ANALYSIS

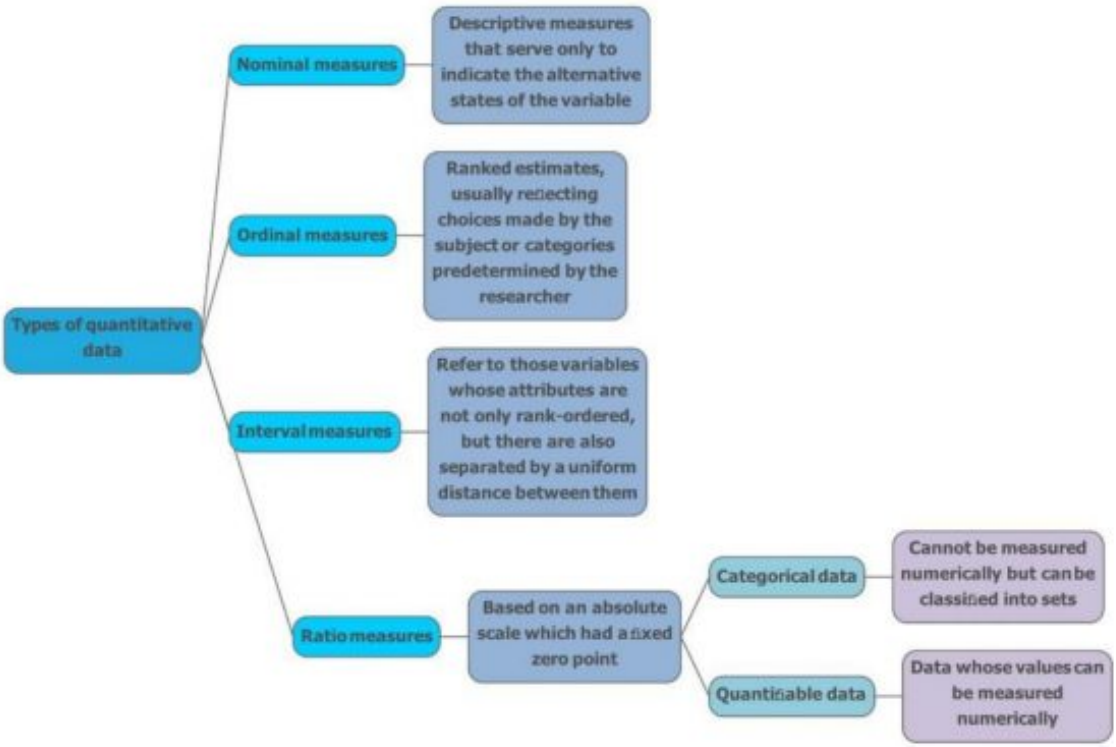
Quantitative data alludes to all information that can be deduced in numerical qualities, going from the numerical recurrence of event to complex introduction of information in terms of diagrams and graphs (Creswell 2014). To convey meaning, the information or data should be analysed and interpreted. To put it plainly, collecting and analysing information with quantitative systems incorporates understanding the relationship among factors using clear and inferential statistics.

This process will require the researcher to:

- Seek advice regarding statistics and statistical analyses should they not have knowledge in the field.
- Utilise, if possible, computer-based analysis software and seek if necessary, the assistance of experts in the field.
- Study the statistical concepts relevant to the needs of the study.

Hence, descriptive statistics enable a concise portrayal of the information regarding measurements, for example rate, frequencies, means and standard deviations. Inferential statistics/measurements go further. While descriptive statistics describe a sample's attributes based on the information gathered from respondents, inferential measurements are utilised to obtain information about the population from which the sample was drawn based on the data outlined in the descriptive measurements (Denzin & Lincoln, 2011)

Mind map 6.1 list the different types of quantitative data and their characteristics.



Mind map 6.1: Types of quantitative data

In analysing quantitative data, it is important to understand the inherent nature of the data to collect, because this will determine the type of analysis that is appropriate and legitimate in the context of the study and the data collection

Four categories of quantitative data:

Nominal measures are descriptive measures that serve only to indicate the alternative states of the variable. For example, in measure of gender, a respondent may be male or female or in measure of religion, a respondent may be Christian, Jewish, Hindu, Moslem,

Buddhist or belong to some other unspecified faith. The respondent is either male or female, either a Christian or not a Christian.

Nominal measures in this manner have the particular qualities of thoroughness and shared restrictiveness. They represent the most reduced conceivable dimension of measurement. In endeavouring to evaluate such information, try to convert it and express the findings/ discoveries as frequencies or percentages. Although it is usual practice to appoint numerical codes to these attributes to facilitate computer analysis, these numbers cannot be used for mathematical purposes.

Ordinal measures are rank estimates, usually reflect choices made by the subject or categories predetermined by the researcher. Ordinal measures can be logically rank-ordered and the different attributes represent relatively more or less of the specific variable. As with nominal data, there is little scope for treating such data mathematically. Frequencies and percentages are calculated, but not the arithmetic mean and statistical analysis which are largely precluded.

Interval measures refer to those variables of which the attributes are not only rank-ordered, but they are separate by a uniform distance between them. An example would be the IQ scale or temperature scales. Interval measures allow some degree of mathematical and statistical treatment. Thus, the arithmetic mean IQ of a group of respondents with a range of IQs can be calculated and correlated and regression analyses can be carried out.

of IQs can be calculated and correlated and regression analyses can be carried out.

Ratio measures are based on an absolute scale, which has a fixed zero point. This means that the scale readings are exactly proportional to the variables being measured. Ratio measures represent the highest possible level of precision and are amenable to all forms of statistical analysis. Saunders et al. (2003:328) stated that quantitative data can also be divided into two distinct categories:

- Categorical data cannot be measured numerically but can be classified into sets (categories) according to specified criteria (e.g. gender, religion, profession, qualification) or placed in rank order (e.g. level of experience, consumer preference, etc.). Nominal and ordinal data fall into this group.
- Quantifiable data is data of which the values can be measured numerically. The more precise the measurement the greater the range of statistical techniques that can be used to analyse the data. Interval and ratio measures fall into this group. Generally it is better in quantitatively-oriented studies to collect data that enables highest possible level of statistical analysis.

Coding of data

All data should be recorded using numerical codes to categorise responses to each item on the research instrument. Simultaneously, a codebook should be designed to maintain a record of the codes for each variable. For instance, for the gender of respondents, the code

used may be 1=male and 2=female or for an item which uses a Likert scale, 1=strongly agree, 2=agree, 3-uncertain, 4=disagree and 5=strongly disagree. All missing data should be indicated through codes. For example, if a respondent did not indicate his/her sex, the code 9 may be used. Items with missing data are then excluded from subsequent analysis of data.

Statistical analysis

Once the data has been coded into a format that can be entered on a spreadsheet or a statistical analysis package, the appropriate procedure may be used to process the data into a format that can be analysed (frequencies, tables, diagrams, etc.).

The tables and diagrams most relevant in addressing the needs of the study will eventually appear in the student's/researcher's dissertation. Tables and diagrams can be used in an exploratory analysis of data to identify trends, show proportions and the distribution of values and to visually compare the relationship among variables.

With descriptive statistics, the researcher can describe (and compare) variables numerically with means and standard deviations, while with inferential statistics, the researcher can reach conclusions about how the data collected relates to the original research objectives and hypothesis and how these results might be generalised to the research population.

Guidelines for the successful application of statistics in the analysis of data

1. Statistics must be appropriate to integrate into the study and not use as a device to create an impression of scientific analysis and objectivity.

2. The researcher must develop a good working knowledge of the principles underlying the statistical procedures in the study to analyse data to enable appropriate use and meaningful interpretation of the results.

3. The researcher who has access to statistical software packages such as SPSS for Windows should first work through examples of coding and analysing research instruments before proceeding with an analysis of the research data.

4. Before the researcher embarks on any kind of statistical analysis, they should determine the characteristics of the data in terms of its type (i.e. nominal, ordinal, interval or ratio) and its distribution (normal or skewed) since these inherent properties will determine what kind of statistical test is possible to use.

The analysis of univariate data

Univariate data analysis involves the analysis of a single variable, usually with descriptive statistics such as the calculation of:

- frequencies
- percentages
- means (the arithmetic 'average' of data)
- median and mode
- standard deviations.

The analysis of bivariate data

In most research, the investigation frequently requests the analysis of the connection between two factors. One helpful way of doing this is to apply recurrence analysis and then put data in a matrix or table. For instance, a specialist may wish to determine the connection among gender and advancement to senior positions in the school management in Astana. Prior examination demonstrated that there are respondents in this example with no missing information for either factor. The table data on these two factors might be introduced as follows:

Rank	Male	Female	Row rates
Principals/ Deputies	10	6	16
HoD's	50	40	90
Teaching staff	98	104	202
Column totals	158	150	308

In such tables, which present the data for two variables through a process referred to as cross-tabulation, it is possible to examine if the variables are significantly associated. The degree of fit can be statistically tested by using the Chi-squared (x^2) test, a non-parametric test that can be used with any data type. The degree of fit between two variables can also be measured with correlation coefficients.

Another common procedure in the analysis of two variables is to test the significance of a difference between the means of two groups for the same variable. A number of statistical procedures can be used for this purpose: "students'" t-test, analysis of variance (ANOVA) and the Mann Whitney U-test,

The researcher must become familiar with the appropriate statistical procedures so that the data can be correctly analysed to address the needs of the topic.

ANALYSIS OF QUALITATIVE DATA

The analysis of subjective data gives the researcher an alternate arrangement of systems, which mirror the philosophical presumptions that support the objective and approach of qualitative research. The examination of subjective information is not the same as the quantitative data. While the analysis of quantitative data depends on implications, qualitative data focuses on implications communicated through words and analysis is conducted using conceptualisation

Saunders, Lewis and Thornhill (2003) stated that the nature of qualitative data has implications for both its collection and its analysis. According to Hussey and Hussey (1997), there are three related elements in the analysis of qualitative data:

- Reducing the data to condense the material in some systematic way to make it more manageable
- Structuring data in terms of themes, patterns and interrelationships
- Decontextualizing the data by converting extended text into more manageable forms such as summaries, charts, diagrams and illustration.

Strategies for qualitative analysis

There are different approaches to the commencement of the process. If the researcher commences from a deductive position, they will seek to use existing theory to shape the process of analysis. In contrast, if the researcher adopts an inductive approach, they will seek to develop a theory, which emerges from the analysis of the data.

Should the researcher adopt a deductive approach, they must first establish a theoretical or descriptive framework that incorporates the main variables, components, themes and issues in the study and the presumed relationship among them. This framework acts as the means to guide the data analysis process.

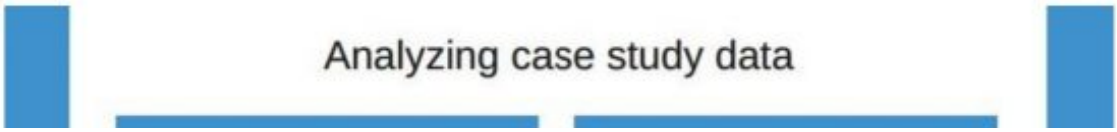
The inductive strategy, in contrast, would require the researcher to collect the data and then to explore it to see which themes or issues to follow up or concentrate on. Generally, this is the more difficult approach requiring a high investment of time and material and human sources. As Creswell (2012) pointed out, where the researcher adapts this approach, they must be guided by this design from the data collection till the data analysis stage. The researcher analyses data as they collect it and develops the conceptual framework to be used during the data analysis stage.

Categorisation in qualitative research

Generally, a field of three approaches can result from this qualitative data analysis procedure. The first is a 'journalistic' approach that is characterised by minimal researcher intervention and the lowest level of patterning, abstraction and interpretation. The participants in the study are allowed to speak for themselves as much as possible. The second is the 'interpretive descriptive' approach where the researcher makes some effort at identification of patterns, establishing interrelationships and general interpretation of patterns and interrelationships. The third is the 'grounded theory' or 'grounded hypothesis' approach, which embodies the highest level of abstraction and interpretation, where building a theory is the primary aim.

ANALYSING CASE STUDY DATA

In analysing case study data, two methods are most fruitful: patterns matching and time series analysis, as listed in Figure 6.1 here.



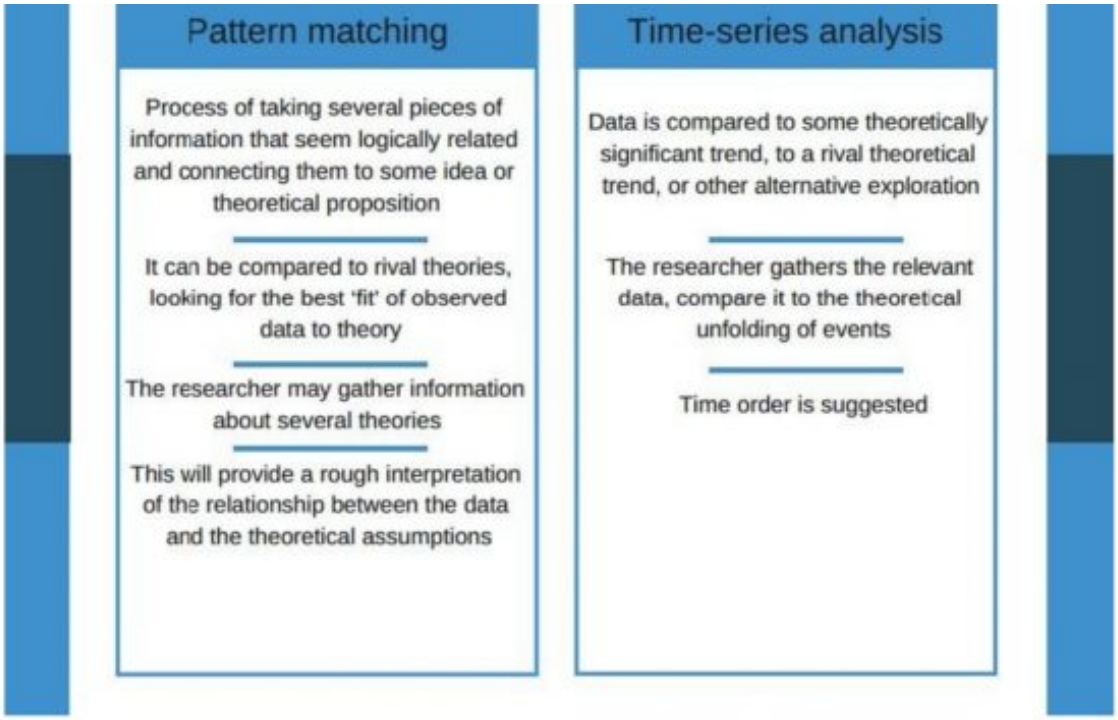


Figure 6.1: Analysing case study data

Regardless of whether the systematic method is patterns matching or time-series analysis, the closer the 'fit' between the expected and the observed information, the more one can accept that the contextual analysis is yielding helpful outcomes. Disparities between the hypothesis and the empirical data can lead to an amendment of the hypothesis, and after that a perfect correlation can be ascertained. Whenever required, this procedure can be repeated and the hypothesis refined after some time because of expanding alterations and corrections that emanate the procedure. In this way, the researcher can consistently reappraise the hypothesis to check whether it is helpful for translating 'this present reality' context of the study.

DATA PRESENTATION AND REPORT WRITING FOR CASE STUDIES

When presenting qualitative data, a number of formats can be used, including the following:

- Linear-analytic presentation
- Comparative structures
- Chronological structures
- Theory-building structures.

The linear-analytic presentation incorporates the examination questions and the clarifications of techniques that will be used for the study – discoveries from the information are clarified. This is a standard methodology, found in most journal articles and expositions displaying contextual analysis findings. The chronological approach follows the case in a time sequence from start to finish, enabling the researcher to reach conclusions effectively about the causal connection between components of the investigation.

A dissertation on a case study methodology should include the following:

- Data collection that is thorough, generally using several data collection strategies
- Careful substantiation of any claims relating to relationships among variables, with the alternate explanations carefully considered
- Comprehensive and engaging presentation of information with case details to support key points.

CHAPTER SEVEN: THE RESEARCH REPORT

Outcomes

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

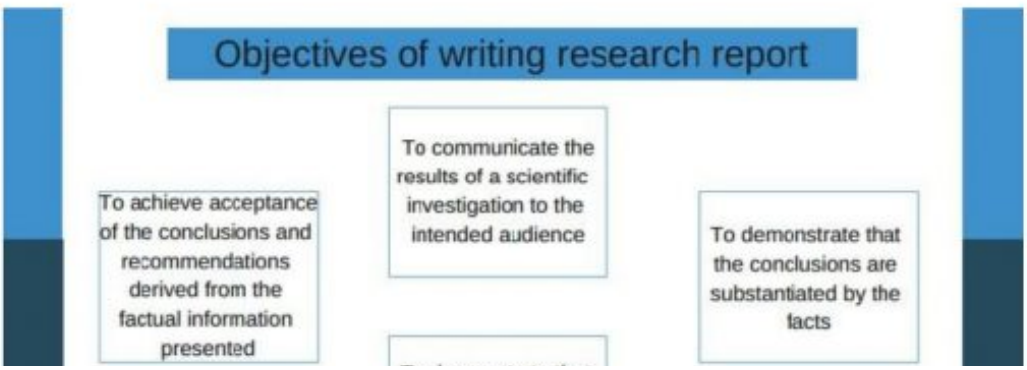
- Effectively plan the writing of a research report
- Apply the basic principles of structuring a research report.

INTRODUCTION

The research report is a brief description or a condensed form of the research work done by the researcher. Several steps are involved to present the report in both the required and ethical format. Normally, the purpose of a research report is for publication in journals, articles or to present at conferences.

OBJECTIVES OF RESEARCH REPORT WRITING

These objectives are listed in Figure 7.1.



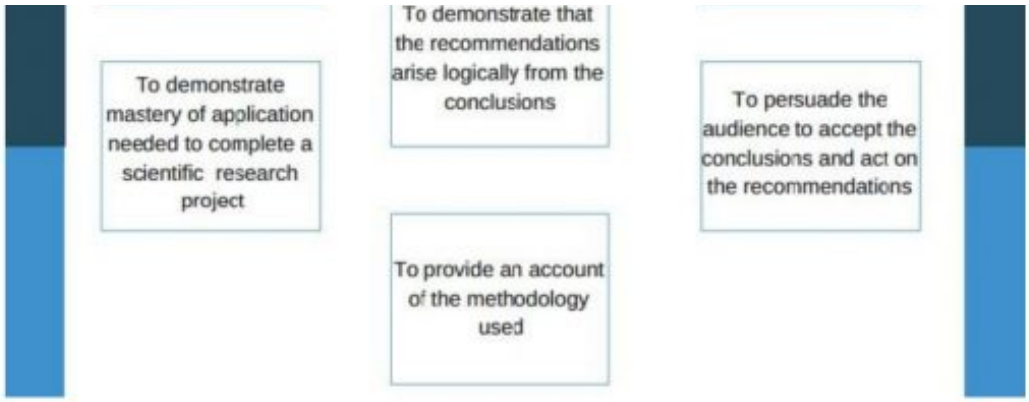


Figure 7.1: Objectives of writing a research report

Characteristics of the research report

- Accuracy
- Clarity
- Conciseness
- Honesty
- Completeness

Types of reports

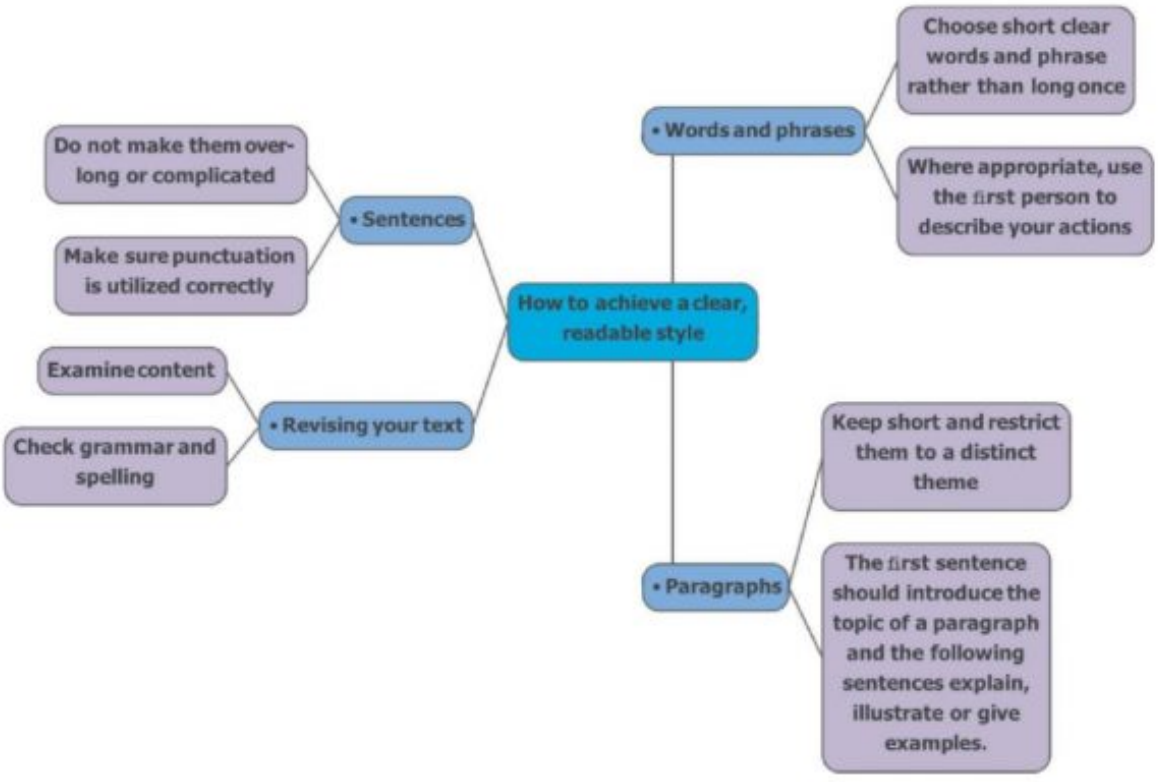
Depending on the set-up and organisation, the research report varies greatly in size, length and the problem the research wants to address. Generally, there are three types of research report, namely the technical report, popular report and oral report. Kothari (2004:

research report, namely the technical report, popular report and oral report. Kothari (2004: 351) stated that the method of presentation to be used depends on the particular scenario and the nature of results.

Below are three types of reports adopted from Kothari's (2004: 353) research methodology strategies:

- Technical report – is used to give a full written report of the scientific study carried out for record keeping. It mostly emphasises the method employed and the detailed presentation of the findings which include the supporting data and study limitations.
- Popular report – emphasises attractiveness and simplicity of the information and findings presented. It is clear, with few technical terms, details and liberal use of charts and diagrams. Emphasis is on the practical aspects and policy implication of the report.
- Oral report – is effective where policy recommendations are ascertained by the project results. The oral report provides an open a platform for giving and taking decisions that lead to the overall understanding of the findings and their implication to the organisation.

Mind map 7.1 below lists some useful suggestions for a clear style in reports. This is followed by the usual steps in writing the report.



Mind map 7.1: Tips for clear, readable style achievement

Steps in writing report

- Logical analysis – is the development of the subject through mental connection and organisation between two things by means of analysis. Thus, it involves the development from a simple to complex structure.
- Preparation of the final outline – a framework from which information is compiled from the long list of points. It is an aid to the organisation of the work in logical manner.
- Preparation of rough draft – the researcher has to write down the procedure followed in collecting the study materials, the limitations faced, what technique was adopted and how it was applied to collect data, followed by the analysis thereof and the findings.

- Polishing and rewriting report – the careful revision of the work by looking or checking the report for weaknesses in the logical development. The researcher should check the language usage, grammar and spelling.
- Final draft – the researcher has to prepare the final report. It must be written in a concise and clear manner by avoiding abstract terminologies and jargon. The report must communicate to people and show originality.
- Bibliography – the researcher has to check for and append all the resources consulted in writing the report. The bibliography should be arranged in alphabetical order (Kothari 2004:347-348) based on the referencing methodology selected (e.g. Harvard).

IMPORTANT RESEARCH TERMS

Theory

Theories use propositions (statements about concepts or variables) as building blocks and intend to explain as opposed to rationalizes, criticise or ridicule the pattern of phenomena of the real world. A theory is a set of related concepts that combine to explain some phenomena or set of phenomena.

Variable

All propositions are changed to hypotheses for testing to occur; the researcher is likely to deal with variables. In practice, the term variable is used as a synonym for the individual components of the phenomena under study. The researcher's interest lies in the relationships among the variables.

Abstract

An abstract (or summary) is a page of the report. It is written after the paper has completed. The reason is that it is a distillation of the important points covered in the body of the report. It tells the reader what the research is about in one succinct paragraph.

References

References are an alphabetical listing of all sources of information from which the researcher drew information during the research writing. The researcher must list only those references that have been actually discussed or cited.

those references that have been actually discussed or cited.

This is not a bibliography (that is, a comprehensive listing of everything on the subject) but a compilation of the materials of authors in the research writing.

Appendices

The purpose of the appendix is to display the raw material and any calculations of the study. Appendices also comprise any questionnaires or tests constructed which are placed at the end of the report and not presented in the main body of the report.

Moderate variable

A moderate variable (MV) is an independent variable because the researcher may believe that it may have a significant moderating effect on the relationship between the primary independent variable links.

Hypothesis

A hypothesis is a tentative, testable statement about the relationship between two or more variables.

BIBLIOGRAPHY AND FURTHER READINGS

Cooper, D.R. and Schindler, P.S. (2003) Business Research Methods. 8th Edition, McGraw-Hill Irwin, Boston

Creswell, J. W. (2012). Educational research: Planning, conducting, and evaluating quantitative and qualitative research (Laureate custom ed.). Boston, MA: Pearson Education.

Creswell, J.W. 2014. Research Design. Qualitative, Quantitative, and Mixed Methods Approaches. Los Angeles: SAGE Publications, Inc.

Denzin, N. K., & Lincoln, Y. S. (2011). The SAGE handbook of qualitative research (4th ed.). Thousand Oaks, CA: Sage.

Hussey, J. and Hussey, R. 1997. Business Research: a practical guide for undergraduate and postgraduate students. London: MacMillan

Kothari, C, R., 2004. Research methodology. Second Edition. New Delhi, New Age International Publisher, India

International Publisher, India.

Saunders, M., Lewis, P. and Thornhill, A. (2003) Research Methods for Business Students. Harlow: Pearson Education Limited

Saunders, M., Lewis, P., and Thornhill, A. 2000. Research methods for Business students. Second Edition. London: Prentice Hall.

Singleton, R. A. 1993. Approach to Social Research. New York: Oxford University Press.

Yin, R. K. (2009). Case study research: Design and methods (4th ed.). California: Sage.

Bloomsburg University guide on literature (2018), http://guides.library.bloomu.edu/english

The book is primary intended to serve as guidebook for schools who teach global perspective and research work for young graduate who are entering colleges and universities. The guidebook contains an introductory explanation of many different approaches of how research can be conducted and what is expected of them in their research or project work.

The book is mostly content mind-map and figures to make it easier for researcher to understand what is expected of them from the stages of their research to completion. The idea was generated from various research readings. It present the basic tenets of methodological steps so that the researcher can become familiar with how to conduct research and what techniques to use in their choice for research writing.

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