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Faculty of Foreign Languages

Department of English

Methodology in Academic Research

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BENHATTAB Abdelkader Lotfi
Président du Conseil Scientifique
Faculté des langues Etrangères

Elaborated by:

Dr. DJEBAILI Walida

Course Details:

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Level: Master 1 Applied Languages

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Course description

In almost all fields today, the academic in particular, research is undertaken with the aim of solving problems, emphasizing already acquired skills and information, or even out of a personal desire to challenge oneself in various ways as the human being is naturally constantly keen on asking questions about himself and his surrounding, and trying to find answers to them. Research is one way to do that, and academically, it remains the only means to embark on such an enterprise. But can we undertake research in any way we want? is it enough to ask/answer questions at random? What differentiates any ordinary query we may have in our daily life from an elaborated type of investigation? It is methodology.

This course, entitled Methodology in Academic Research, is designed and delivered for Master 1 students (Applied Languages) at Oran 2 university, Mohamed Benahmed. Inasmuch as students have already received an understanding of the basic concepts during the Bachelor degree, this course is based on the methodology of research to help them acquire and use adequate tools to undertake research, as in the following year, they are expected to write a master dissertation in partial fulfilment of the requirements of a Master Degree, and later a Doctoral thesis.

The crux of this course lies thus in developing the basic notions of methodological research, procedures and techniques in particular, to provide the students with a detailed research process type that they can apply later to their own research subject when writing their dissertations.Additionally, they will be allowed to practise in class, an opportunity to develop their interest in various areas of research. The course will spotlight the diverse research types acknowledged by the scientific community, provide the students with a

set of skills, and prepare them to undertake one of them respecting the relevant methodology to each type, with the view of achieving a proper research paper that includes all the characteristics and requirements of a good and valid research process.

By the end of the course, it is expected that students will be able to:

- define what reasons they have to undertake research.
- understand information and choose the appropriate ways of collecting/analyzing it.
- master terminology, methods and techniques to produce a valid and reliable research paper.

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Lecture 1: Methodology of Research: Introduction

Introduction

When undertaking research in any academic discipline, one might face difficulties in collecting, organizing and linking to one another the gathered information and data. To be valid and reliable, the results of such a research need to comply with certain universal rules, though sometimes they may differentiate regarding styles. Hence a resort to methodology is required. What is then meant by the concept of methodology? How does it help overcome the difficulties encountered during the diverse steps of research? To what extent does it help in developing and shaping the researcher's ability to further undertake research? How to achieve the main objective of research that lies in that capacity of using one's own style without renouncing techniques and reliability? The present lecture will attempt to spotlight these particular points and bring answers to these questions, among others.

What is Research?

The etymology of the word dates back to the 16th century old French (re-) and (cerchier = to search) meaning embarking on an adventure of

> …a logical and systematic search for new and useful information on a particular topic. It is an investigation of finding solutions to scientific and social problems through objective and systematic analysis. It is a search for knowledge, that is, a discovery of hidden truths. Here knowledge means information about matters. The information might be collected from different sources like experience, human beings, books, journals, nature, etc. Research can lead to new contributions to the existing knowledge. Only through research is it possible to make progress in a field. Research is done with the help of study, experiment, observation,

analysis, comparison and reasoning. Research is in fact ubiquitous. More precisely, research seeks predictions of events and explanations, relationships and theories for them (Chinnathambi et. al., 2006).

Therefore, research has to do with new inquiry. It also deals with and enriches an already acquired knowledge in diverse fields. It is the expression of a human desire to be in a continuous quest for truth and progress. It is what to do and how to do, and for what purpose.

Good research must begin with a good research question. Yet coming up with good research questions is something that novice researchers often find difficult and stressful. One reason is that this is a creative process that can appear mysterious—even magical— with experienced researchers seeming to pull interesting research questions out of thin air. However, psychological research on creativity has shown that it is neither as mysterious nor as magical as it appears. It is largely the product of ordinary thinking strategies and persistence (Weisberg, 1993). There are simple strategies for finding general research ideas, turning those ideas into empirically testable research questions, and finally evaluating those questions in terms of how interesting they are and how feasible they would be to answer.

Research questions often begin as more general research ideas—usually focusing on some behaviour or psychological characteristic: talkativeness, learning, depression etc…Before looking at how to turn such ideas into empirically testable research questions, it is worth looking at where such ideas come from in the first place. Three of the most common sources of inspiration are informal observations, practical problems, and previous research.

Informal observations include direct observations of our own and others' behaviour as well as second-hand observations from non-scientific sources such as newspapers, books, blogs, and so on. For example, you might notice that you always seem to be in the slowest moving line at the grocery store. Could it be that most people think the same thing? Or you might read in a local newspaper about people donating money and food to a local family whose house has burned down and begin to wonder about who makes such donations and why. Some of the most famous research in psychology has been

inspired by informal observations. Stanley Milgram's famous research on obedience to authority, for example, was inspired in part by journalistic reports of the trials of accused Nazi war criminals—many of whom claimed that they were only obeying orders. This led him to wonder about the extent to which ordinary people will commit immoral acts simply because they are ordered to do so by an authority figure (Milgram, 1963).

Practical problems can also inspire research ideas, leading directly to applied research in such domains as law, health, education, and sports. Does taking lecture notes by hand improve students' exam performance? How effective is psychotherapy for depression compared to drug therapy? To what extent do cell phones impair people's driving ability? How can we teach children to read more efficiently? What is the best mental preparation for running a marathon?

Probably the most common inspiration for new research ideas, however, is previous research. Recall that science is a kind of large-scale collaboration in which many different researchers read and evaluate each other's work and conduct new studies to build on it. Of course, experienced researchers are familiar with previous research in their area of expertise and probably have a long list of ideas. This suggests that novice researchers can find inspiration by consulting with a more experienced researcher (e.g., students can consult a faculty member). But they can also find inspiration by picking up a copy of almost any professional journal and reading the titles and abstracts. In one typical issue of Psychological Science, for example, you can find articles on the perception of shapes, anti-Semitism, police line-ups, the meaning of death, second-language learning, people who seek negative emotional experiences, and many other topics. If you can narrow your interests down to a particular topic (e.g., memory) or domain (e.g., health care), you can also look through more specific journals, such as Memory & Cognition or Health Psychology (Research Methods in Psychology).

Generating Empirically Testable Research Questions

Once we have a research idea, we need to use it to generate one or more empirically testable research questions, that is, questions expressed in terms of a single variable or relationship between variables. One way to do this is to look closely at the discussion section in a recent research article on the topic. This is the last major section of the

article, in which the researchers summarize their results, interpret them in the context of past research, and suggest directions for future research. These suggestions often take the form of specific research questions, which they can then try to answer with additional research. This can be a good strategy because it is likely that the suggested questions have already been identified as interesting and important by experienced researchers.

But you may also want to generate your own research questions. How can you do this? First, if you have a particular behaviour or psychological characteristic in mind, you can simply conceptualize it as a variable and ask how frequent or intense it is. How many words on average do people speak per day? How accurate are our memories of traumatic events? What percentage of people have sought professional help for depression? If the question has never been studied scientifically—which is something that you will learn in your literature review—then it might be interesting and worth pursuing.

If scientific research has already answered the question of how frequent or intense the behaviour or characteristic is, then you should consider turning it into a question about a statistical relationship between that behaviour or characteristic and some other variable. One way to do this is to ask yourself the following series of more general questions and write down all the answers you can think of.

- What are some possible causes of the behaviour or characteristic?
- What are some possible effects of the behaviour or characteristic?
- What types of people might exhibit more or less of the behaviour or characteristic?
- What types of situations might elicit more or less of the behaviour or characteristic?

In general, each answer can be conceptualized as a second variable, suggesting a question about a statistical relationship. If you were interested in talkativeness, for example, it might occur to you that a possible cause of this psychological characteristic is family size. Is there a statistical relationship between family size and talkativeness?

Or it might occur to you that people seem to be more talkative in same-sex groups than mixed-sex groups. Is there a difference in the average level of talkativeness of people in same-sex groups and people in mixed-sex groups? This approach should allow you to generate many different empirically testable questions about almost any behaviour or psychological characteristic.

If through this process you generate a question that has never been studied scientifically—which again is something that you will learn in your literature review—then it might be interesting and worth pursuing. But what if you find that it has been studied scientifically? Although novice researchers often want to give up and move on to a new question at this point, this is not necessarily a good strategy. For one thing, the fact that the question has been studied scientifically and the research published suggests that it is of interest to the scientific community. For another, the question can almost certainly be refined so that its answer will still contribute something new to the research literature. Again, asking a series of more general questions about the statistical relationship is a good strategy:

- Are there other ways to operationally define the variables?
- Are there types of people for whom the statistical relationship might be stronger or weaker?
- Are there situations in which the statistical relationship might be stronger or weaker including situations with practical importance?

For example, research has shown that women and men speak about the same number of words per day—but this was when talkativeness was measured in terms of the number of words spoken per day among university students in the United States and Mexico. We can still ask whether other ways of measuring talkativeness—perhaps the number of different people spoken to each day—produce the same result. Or we can ask whether studying elderly people or people from other cultures produces the same result. Again, this approach should help you generate many different research questions about almost any statistical relationship (Research Methods in Psychology).

Evaluating Research Questions

Researchers usually generate many more research questions than they ever attempt to answer. This means they must have some way of evaluating the research questions they generate so that they can choose which ones to pursue. In this section, we consider two criteria for evaluating research questions: the interestingness of the question and the feasibility of answering it.

Interestingness

How often do people tie their shoes? Do people feel pain when you punch them in the jaw? Are women more likely to wear makeup than men? Do people prefer vanilla or chocolate ice cream? Although it would be a fairly simple matter to design a study and collect data to answer these questions, you probably would not want to because they are not interesting. We are not talking here about whether a research question is interesting to us personally but whether it is interesting to people more generally and, especially, to the scientific community. But what makes a research question interesting in this sense? Here we look at three factors that affect the value of a research question: the answer is in doubt, the answer fills a gap in the research literature, and the answer has important practical implications.

First, a research question is interesting to the extent that its answer is in doubt. Obviously, questions that have been answered by scientific research are no longer interesting as the subject of new empirical research. But the fact that a question has not been answered by scientific research does not necessarily make it interesting. There has to be some reasonable chance that the answer to the question will be something that we did not already know. But how can you assess this before actually collecting data? One approach is to try to think of reasons to expect different answers to the question— especially ones that seem to conflict with common sense. If you can think of reasons to expect at least two different answers, then the question might be interesting. If you can think of reasons to expect only one answer, then it probably is not. The question of whether women are more talkative than men is interesting because there are reasons to expect both answers (Research Methods in Psychology). The existence of the stereotype itself suggests the answer could be yes, but the fact that women's and men's verbal

abilities are fairly similar suggests the answer could be no. The question of whether people feel pain when you punch them in the jaw is not interesting because there is absolutely no reason to think that the answer could be anything other than a resounding yes.

A second important factor to consider when deciding if a research question is interesting is whether answering it will fill a gap in the research literature. Again, this means in part that the question has not already been answered by scientific research. But it also means that the question is in some sense a natural one for people who are familiar with the research literature. For example, the question of whether taking lecture notes by hand can help improve students' exam performance would be likely to occur to anyone who was familiar with research on notetaking and the ineffectiveness of shallow processing on learning.

A final factor to consider when deciding whether a research question is interesting is whether its answer has important practical implications. Again, the question of whether taking notes by hand improves learning has important implications for education, including classroom policies concerning technology use. The question of whether cell phone use impairs driving is interesting because it is relevant to the personal safety of everyone who travels by car and to the debate over whether cell phone use should be restricted by law.

Feasibility

A second important criterion for evaluating research questions is the feasibility of successfully answering them. There are many factors that affect feasibility, including time, money, equipment and materials, technical knowledge and skill, and access to research participants. Clearly, researchers need to take these factors into account so that they do not waste time and effort pursuing research that they cannot complete successfully (Research Methods in Psychology).

Looking through a sample of professional journals in psychology will reveal many studies that are complicated and difficult to carry out. These include longitudinal designs in which participants are tracked over many years, neuroimaging studies in which

participants' brain activity is measured while they carry out various mental tasks, and complex nonexperimental studies involving several variables and complicated statistical analyses. Keep in mind, though, that such research tends to be carried out by teams of highly trained researchers whose work is often supported in part by government and private grants. Keep in mind also that research does not have to be complicated or difficult to produce interesting and important results. Looking through a sample of professional journals will also reveal studies that are relatively simple and easy to carry out—perhaps involving a convenience sample of university students and a paper-and-pencil task.

A final point here is that it is generally good practice to use methods that have already been used successfully by other researchers. For example, if you want to manipulate people's moods to make some of them happy, it would be a good idea to use one of the many approaches that have been used successfully by other researchers (e.g., paying them a compliment). This is good not only for the sake of feasibility—the approach is "tried and true"—but also because it provides greater continuity with previous research. This makes it easier to compare your results with those of other researchers and to understand the implications of their research for yours, and vice versa (Research Methods in Psychology).

Types of research

Research is mostly taken from real life experiences of people in society. How data is collected and analysed requires a sorting of academic investigation into two broad types: qualitative and quantitative.

1-Qualitative research

It is an approach that focuses rather on quality than quantity with an interpretative technique of enquiry. It

> …attempts to gain insight into the specific meanings and behaviours experienced in a certain social phenomenon through the subjective experiences of the participants. The researcher builds abstracts, concepts,

hypotheses, or theories by asking such questions as 'why', 'how' and 'in what way? (Bolderston and Palmer, 2006).

Personal interpretation is more important here than numerical data. To analyse the social experience of a human being will thus be related to how well it is portrayed so as to forward the message to the reader in an expressive picture using words instead of numbers, figures or charts. It is often subjective, and this can be a weakness and a strength at the same time. It is also characterized by a certain flexibility and the course of action may vary as the research process evolves. One may question the validity of the qualitative methods as these are not subject to acknowledged universal standards, yet most of the researchers who choose this type of research can be assessed according to the "…criteria of truth value, consistency and neutrality and applicability" (Noble and Smith: 2015).

A comparison of qualitative and quantitative research will thus show that the former is more structured in form and process of enquiry and is essentially used when one's research target is to

> describe a situation phenomenon problem or event; if the information is gathered through the use of variables measured on nominal or ordinal scales (qualitative measurement scales) and if the analysis is done to establish the variation in the situation, phenomenon, or problem without quantifying it. the description of an observed situation, the historical enumeration of events, an account of the different opinions people have about an issue, and a description of the living conditions of a community are examples of qualitative research (Kumar, 2011: 13).

2-Quantitative Research

On the other hand, we describe as quantitative research a process concerned with the variation in a phenomenon, situation, problem or issue. We thus collect information using mainly quantitative variables. Quantitative research has to do with the magnitude of the variation. Several examples from our daily life can illustrate this: How many

working students are concerned with work/studies balance hardships? How many give up their studies? The use of statistics is an integral part of a quantitative study. Using statistics is thus a pre-requisite in this type of research. Statistics serve as a test to confirm or contradict the conclusions we draw. They are necessary to quantify the magnitude of an association or relationship and assess to what extent our results are reliable. Nevertheless, one question arises here: is the researcher impelled to choose one of the two aforementioned approaches? The most common response would be no. The research field is so vast and a mixture of the two types is possible. It is true that some disciplines impose either qualitative or quantitative approach, yet a good knowledge of methodological tools allows a simultaneous use of both (Bolder and Palmer, 2006).

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Think About it-

- What is the difference between qualitative and quantitative research?

- How can a researcher achieve the main objective of research (using one's own style) without renouncing techniques and reliability?

- When can Personal interpretation be more important here than numerical data? Illustrate with examples of your own.

- Would you choose a qualitative or a quantitative approach for your research? Justify your answer.

<p style="text-align:center">Lecture 2: Research Perspectives:</p>

<p style="text-align:center">1-Application</p>

Introduction

A variety of problems in research can be tackled in a variety of ways. These will be referred to here as perspectives. In other words, we can look at methodology in research from different angles, a kind of classification that will focus on three types: application, objectives and enquiry mode. Each type is of a paramount importance for the process of research and a simultaneous use of the three is not rare. Typically, they are used in social sciences where the primary goal is to understand an issue, bring changes to a programme, etc…

The perspectives

1-Application

 When dealing with the outcome of a research, the concept application commonly refers to pure research and applied research. Both serve the refinement of research methods, still they differ in some aspects. Pure research, also known as fundamental research, has to do more with the development, examination and verification of the methods, procedures and techniques of research. In other words, it is concerned with the development of an already acquired knowledge by establishing new theories or modifying existing ones. It relies very much on exploration and knowledge analysis. It is not concerned with solving a problem or an issue. Pure research is primarily characterised by explanation and analysis. The researcher acquires new knowledge and also develops an already acquired one. This generates a sense of universality as the new theories or even the adapted ones can be used by other researchers anywhere. It is about applying rules/theories to different themes in research. The impact of pure research is therefore relatively wide from this particular point of view. The watchword is therefore investigation tinged, nevertheless, with a certain degree of subjectivity (Kothari, 1985).

Pure research is commonly used in education to develop new pedagogic theories that explain different behaviours by teachers and learners within the learning environment. Hence, it is universal in nature. It usually covers research themes like the elaboration of a sample tool that can be applied to specific situations/cases. This makes it possible for many researchers to use it as a reference.

Applied research on the other hand is primarily concerned with providing practical solutions to specific problems by analysing empirical evidence. It focuses on applying knowledge to solve existing problems, and is accordingly described as solution-specific. It is a sort of enquiry that is rather directed towards a phenomenon, an issue or a problem that requires empirical ways of research. The objective of this type of research is to investigate the results of pure research in order to validate the findings and apply them to create innovative solutions to specific problems. The main difference between pure and applied research is that the latter generates solutions for a given problem while the former seeks to expand knowledge in a field of study.

Applied research is thus more practical and importance is given to the application of findings to solve a particular problem. It can be described as a more objective method. Furthermore, it can be depicted as more valid because it largely relies on empirical evidence and standardized scientific procedures.

In education, applied research is used to improve teaching and learning methods by providing practical solutions to pedagogical problems. Examples in this field may include: How does the human memory work? How do learners acquire new languages? What difficulties do they encounter in such a process? We can also find themes like how to improve classroom interaction between teachers and learners…In the health sector for instance, applied research helps health and medical practitioners to develop evidence-based solutions to pressing health problems. On the other hand, basic research helps medical practitioners to inquire into the origin and symptoms of diseases with the view of developing a cure for such conditions. Other examples of applied research in health may include ways to determine the healing properties of mushrooms, an investigation to determine the side effects of alcohol addiction etc... Examples in Psychology are also interesting for study (Saravanavel, 1987). Applied research is

useful to create solutions for problems related to workplace behaviour, organizational policies and employee recruitment processes. Basic research can therefore be used to understand these behaviours better. Examples of basic research in psychology may concern the following: Causes of panic attacks and symptoms of anxiety disorders. Applied research may comprise treatment options for these anxiety disorders and ways to improve employees' productivity in the workplace. Accordingly, the main point that differentiates basic and applied research is that the former is knowledge-specific while the latter focuses on providing a solution to a specific problem/issue. In other words, applied research helps to find practical solutions to defined problems while basic research helps to gather new information about a concept, phenomenon or field of study. Basic research explores the functions and features of newly discovered phenomena in order to improve the understanding of these concepts hence; it fuels scientific and technological innovations. Applied research, on the other hand, helps to provide solutions to improve a specific condition or create a new technology.

Basic research is driven by curiosity and the need to explore new areas of knowledge in different fields while applied research focuses on providing answers to specific questions in order to solve a problem. The former is therefore concerned with examining empirical evidence for answers while the latter examines data samples in order to gather more information about them. Such information improves the quality of knowledge of the subject matter. Basic research is conducted in a controlled research environment such as a laboratory while applied research can take place in a real-life setting. The sterile research context in basic research allows the researcher to strictly observe the behaviours and characteristics of the research subjects. In applied research, however, the researcher allows the dependent and independent variables to freely interact with one another in an unrestricted setting where other variables or third factors may intervene. This allows the researcher to have a broader overview of the research problem and arrive at valid and practical solutions (Bernard, 1994).

Scope of the Research

The limited scope of applied research is another element that distinguishes it from basic research. While basic research can be applied to diverse concepts, applied research

largely focuses on a specific subject, and its results are primarily relevant to this subject. It deals with diverse concepts across different subject matters, and enjoys therefore a greater universality among researchers. Fundamental research explores knowledge across multiple dimensions in order to gather new information and improve an existing body of knowledge.

Basic research aims at formulating theories that explain research findings. Applied research aims at arriving at research findings that can solve practical problems. The former focuses on principles and theories and the latter on solutions. Basic research aims at formulating theories and generalisations that explain a concept, subject or phenomenon and are universally applicable. Applied research studies empirical evidence in order to align its findings with a specific problem/issue.

Research Results

At the end of the research process, applied research leads to valid findings or conclusions that confirm or negate the research hypotheses. These results bring a specific answer to the researcher's initial query. At the same concluding point of the research process, basic research engenders new theories, new dimensions to existing theories or new information that improves an already existing knowledge. Therefore, the results here are not considered as a concrete solution to the problem (Kothari, 1985).

Different approaches

Basic research is based on theory and applied research on practice. The former generates theories and improves existing ones to enlarge and enrich an existing knowledge bank. Applied research, on the other hand, is practical and more descriptive in nature. It is more concerned with the utility and value of research outcomes in terms of their end usage, in other words, it is meant to solve existing problems and develop innovations.

To conclude, it is important for researchers to understand the similarities and differences between applied and basic research methods. The major difference is the purpose of the research: what does the research aim at? In addition, they differ in the outcomes, the nature of the research and its context ("The Differences in Basic Research",2021). They

nevertheless adopt similar data gathering processes including observation and interviews, in order to arrive at objective ends.

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Think About It-

- Both pure and applied research serve the refinement of research methods. In what ways do you think they differ?

- What do the valid findings/conclusions that confirm or negate the research hypotheses bring to the researcher's initial query?

- Give two examples of research based on theory and practice. What are the main features of each?

- In addition to the objective of research, what makes a researcher choose between pure and applied research?

Lecture 3: Research Perspectives:

2-Objectives

Introduction

Another basis upon which the classification of research is made is the perspective of objectives. In other words, it is a different angle from which we can look at research and organise it into types. As formerly seen in lecture 2 with the perspective of application, the researcher can simultaneously use the two perspectives, they are not mutually exclusive. From the point of view of objectives, we can distinguish four types of research: descriptive, correlational, exploratory and explanatory.

1-Descriptive Research

Descriptive research or study has to do, as its name suggests, with description. It is related to facts and wishes, people and material objects, plans etc... One of the components of research is getting enough information about the research problem: the what, how, when and where answers. It is very useful when conducting research when the aim is to identify characteristics, frequencies, trends, correlations, and categories.

This research method takes a problem with little information and supplies it with a suitable description using qualitative and quantitative research methods. Descriptive research aims to describe a research problem in details: a population, situation, or phenomenon, etc...

It is more concerned with the how, what, when, and where questions rather than the why because it is important to understand first what a research problem is about before investigating why it exists. An illustrating example is considering the ever-changing housing market in large cities to understand the current state of the market, how it changes (increasing or decreasing), and when it changes (time of the year) before asking for the why. This is where descriptive research is conducted ("Descriptive-research" 2020).

Types of Descriptive Research

Descriptive research is classified into different types according to the kind of approach that is used in conducting it:

1.1-Descriptive Survey

The collection of data about varying subjects uses survey as a research instrument. This data aims to know to what extent different conditions can be obtained among these subjects. For example, when a researcher wants to determine the qualification of workers in an enterprise, a survey proves to be a useful instrument via the Yes/No answer. The researcher can thus describe the qualifications possessed by the employees of this community.

1.2-Descriptive-Normative Survey

Closely related with the descriptive survey, the descriptive-normative survey is concerned with the comparison of the results of the study with the norm. For example, an organization that wishes to test the skills of its employees by a team may have them take a skills test. The skills tests are the evaluation tool in this case, and the result of this test is compared with the norm of each role. If the score of the team is one standard deviation above the mean, it is very satisfactory, if within the mean, satisfactory, and one standard deviation below the mean is unsatisfactory.

1.3-Descriptive Status

This technique is based on quantitative description and seeks to answer questions about real-life situations. For example, a researcher investigating the salary of the employees in a company and to what extent this can have an impact on their performance at work. A survey will be carried out to gather enough data about the income of the employees, then their performance will be evaluated and compared to this income. This will help determine whether a higher income means better performance and vice versa (Bulmer, 1997).

1.4-Descriptive Analysis

The descriptive analysis method of research describes a subject by further analysing it. It implies dividing it into two parts. For example, a class of learners where a group sits

for the lectures with the teacher, and another studying online. A questionnaire is devised to analyse the amount of effort done by each group, in addition to the amount of interest and motivation displayed in different learning conjunctures.

1.5-Descriptive Classification

This method is employed in biological sciences for the classification of plants and animals. A researcher who wishes to classify the sea animals into different species will collect samples from various search stations, then classify them accordingly.

1.6-Descriptive-Comparative

In descriptive-comparative research, the researcher considers two variables and establishes a kind of comparison to assess which is better than the other. For example, an examination body wants to determine the better method of conducting tests between paper-based and computer-based tests. A random sample of potential participants of the test may be asked to use the two different methods, and factors like failure rates, time factors, and others will be evaluated to arrive at the best method.

1.7-Correlative Survey

Correlative surveys are used to determine whether the relationship between two variables is positive, negative, or neutral. In other words, it investigates whether two variables are directly proportional, inversely proportional or are not related to each other.

2-Correlational Research

Correlational research is generally used when the target is to find out whether there is a relationship between two variables. It is also conducted when the researcher suspects the existence of causality between them. This type of research is frequently present in our daily life: When we establish a connection between the alarm clock and time to go to work for instance. Correlational research is a research method that involves observing two variables in order to establish a statistically corresponding relationship between them. The aim is to identify variables that have some sort of relationship in a way that a change in one engenders some change in the other. For example, correlational research

may reveal the statistical relationship between rainfall in a given region and the increasing number in farmers involved in agriculture. There are three types of correlational research, each with specific characteristics Approaches (Blaike,2007).

2.1-Positive Correlational Research

Positive correlational research is a research method involving two variables that go statistically hand in hand. In other words, an increase or decrease in one variable generates a similar change in the other. For example: an increase in the number of ingested calories is accompanied by an increase in the number of kilogrammes on the scale (overweight).

2.3-Negative Correlational Research

Negative correlational research is a research method involving two variables that are statistically opposite where an increase in one creates a decrease in the other. An example of a negative correlation: the rise in the number of learners in a class causes a decrease in the degree of assimilation and vice versa.

2.4-Zero Correlational Research

In zero correlational research the two variables are not statistically connected. A change in one of the variables does not culminate in a corresponding change in the other. We can accordingly talk of a vague statistical relationship. For example, the two variables of luck and success are statistically independent. One can be lucky enough without necessarily succeeding in life and vice versa. Sporadic change patterns that occur in variables with zero correlational are usually by chance and not as a result of corresponding or alternate mutual inclusiveness.

Correlational research can also be classified based on data collection methods. There are three types of correlational research: Naturalistic observation research, survey research and archival research ("Correlation Definitions, Examples and Interpretation" 2014).

The first data collection methods in correlational research are the research methodologies to determine the linear statistical relationship between two variables. These data collection methods are used to gather information

Naturalistic observation involves observing people's behaviours as shown in their natural environment, over a period of time. It is a type of research-field method that implies paying closing attention to natural behaviour patterns of the subjects under consideration. *Naturalistic Observation* requires an extra effort to ensure that the subjects under study do not suspect they are being observed otherwise they deviate from their natural behaviour patterns.

To remain anonymous is a good idea to avoid a breach of privacy. The major advantages of the naturalistic observation method are that it allows the researcher to fully observe the variables in their natural state. However, it is a very expensive and time-consuming process, in addition to the fact that the subjects under study can figure out they are observed, and change their behaviour which will accordingly affect the reliability of the research results ("Naturalistic Observation: Definition" 2022).

Archival data on the other hand involves making use of already gathered information about the variables in correlational research. It is therefore usually straight to the point. It uses earlier studies conducted by other researchers or the historical records of the variables being analysed. This method helps a researcher to track already determined statistical patterns of the variables or subjects. This method is less expensive, not very much time-consuming and provides the researcher with more valid data to work with. Nevertheless, the researcher may encounter a problem of data accuracy as important information may be missing from previous research since the researcher has no control over the data collection process (Turiano, 2014).

3-Exploratory research

Exploratory research is the process of investigating a problem about which little or no research had been conducted before. Exploration is thus conducted to have a better understanding of the existing problem, but usually does not lead to a conclusive result. Researchers use exploratory research to gain familiarity with an existing phenomenon and acquire new insight into it. It is based on a general idea and the outcome of the research is used to find out related issues with the topic of the research. In this type of research, the process varies according to the finding of new data or investigation. Also

known as interpretative research or grounded theory approach, the outcomes of this research provide answers to the what, how and why questions.

Exploratory research is inexpensive, highly interactive and open-ended in nature. It is not based on prior relevant information available from past researchers. It has no predefined structure. It answers questions like how and why to help the researcher acquire more information. The absence of relevant information from past research means the researcher will spend a lot of time studying materials in detail. Since there is no standard for carrying out exploratory research, it is usually flexible and open to initiatives. However, there must a few theories which can verify the outcome. Researchers cannot form a conclusion based on exploratory research.

To gather data in this kind of research, we can number two methods : primary and secondary research methods. The process of conducting research tends to be more difficult when dealing with a problem that has not been deeply investigated before. In the primary research method, data is collected directly from the subject of investigation which can be a group of people or an individual. Data can be collected by the researcher himself or through a third party as long as the main purpose of the research is fulfilled. The objective of conducting this research is to collect information about the problem which requires deeper analysis and study. It can comprise observations where the researcher does not come in close contact with the subject, but observing them from afar. This can be done either by informing the subject that he is being observed or by doing it discreetly without his permission. The second way is said to gather fairer data as it leads to more natural and truer results (Bulmer,1997).

Surveys are used to collect data from a predefined subject to study trends, opinions, and behaviour of a group of people within a given community under a given conjuncture. It is easier today to conduct surveys online and reach diverse demography of participants from all over the world. However, offline surveys can also be conducted. These can be more stressful and time-consuming. The best of these remains the interview in terms of collecting detailed and correct data. It can be conducted in person, via phone call or video call. Interviews can also be recorded by the researcher in case they need to go back to it and confirm specific information.

Focus group is also another technique that researchers can use to collect data from a group of people with similar characteristics. The research is conducted using any of the three methods. For example, a focus group of brilliant students may be investigated on how they do when they encounter specific learning difficulties. Exploratory research is inexpensive, does not have a standard process and is very flexible. The gathered information is very important and helps further investigation by other researchers.

4-Explanatory research

Explanatory research is concerned with why something occurs. It serves as a starting point for deeper studies. It helps understand how to figure out the root cause for a certain situation and fill gaps in missing information. It is used to find details in areas in which little information is available and create a general understanding of the research topic by the researcher. Questions for this type of research usually begin with "Why is...?" Explanatory research explains the different components of a research study. It is a way to collect qualitative data or information that analyses patterns.

Explanatory research also examines the extent of a cause-and-effect relationship between two variables. It explores questions without drawing any conclusions. An example of explanatory research would deal with why do students learning foreign languages increasingly rely on translation. A number of factors may be listed but none can be considered as the sole responsible for such a phenomenon. Explanatory research helps researchers understand a particular problem in depth. This can give a better comprehension of a specific topic. By conducting explanatory research, individuals can understand the cause, or hypothesis, behind a phenomenon and predict future occurrences. Explanatory research has several advantages , namely filling the gap in the research process by explaining a phenomenon, identifying the impacts of particular changes to processes, standards or techniques, providing more opportunities to research new subjects, helping people understand a problem in a better way ("Cause and Effect" 2012).

We can easily distinguish explanatory research when there are no conclusive results but rather, we end up with insight on the why and "how" of the problem. It helps form theories or hypotheses. It uses primary and secondary research to find information. It

serves to help an individual understand a topic. Explanatory research include interesting fields such as case studies which allow researchers to examine companies that experienced the same situation as them. This can provide researchers with new perspectives to help them solve their problems more effectively. Looking at a particular group can help you create an understanding of complex problems.

Literature research on the other hand is the process of searching for materials, either online or in libraries, to help determine the hypothesis of a phenomenon. This involves looking at articles in magazines, newspapers, trade literature and academic sources.

The identification of a problem is one prerequisite for undertaking an explanatory research, followed by the development of a hypothesis. These are proposed explanations for why a situation occurs. Choosing a method to gather data may depend on the budget and other factors, such as the topic and timeline. Then , the researcher moves on to record the findings to reflect on at a later time: taking notes or recording audio during the focus group to track what consumers said (Bulmer,1997).

Finally, the researcher reviews the data. Although explanatory research does not create a formal conclusion, results can still be helpful to an organisation. Depending on the findings, one may decide to conduct further research to elaborate in another field. Results from explanatory research can help lead to developments in organizing and generating new approaches.

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Think About It-

- What are the types of descriptive research ?

- What is the use of skills tests in Descriptive-Normative survey?

- Give an example of a research theme where you establish a comparison as a tool of efficiency assessment .

- What is the objective of a correlational research ?

- In what field of study can you use positive correlational research ?

- Does exploratory research lead to conclusive results? Why?

- How do you gather data in exploratory research ?

Introduction

If we look at the enquiry mode, we can classify research into two distinct types: research that adopts a structured approach in its quest for data, and an unstructured approach. In the former, the different steps of research are planned in advance. These range from the objectives, the design, and the sample to the questions destined for respondents in questionnaires. It is generally destined to determine the extent of a problem, issue or phenomenon. On the other hand, the unstructured approach allows more flexibility in the research process, and is more frequently used when the objective of the research is to explore the nature of a problem, issue or phenomenon.

1-Structured Approach

Structured approach is a common method of gathering data in quantitative research. The questions are set in advance in order to gather information about the research subjects. It aims at investigating research variables using the same set of questions. The researcher collects information with regards to the quantity or numerical value of the research subjects. He outlines events, behaviours, procedures, and guidelines for conducting the research and recording the information collected to serve as the research data. A standardized process of inquiry and a quantitative method of observation are two main features of such an approach. It is easy to replicate and is sequential in nature.

2-Unstructured Approach

In contrast, the unstructured approach is not very much concerned with standardisation, but is rather associated with the context and purpose of the systematic investigation. It relies on spontaneity and follow-up questioning in order to gather detailed information from the research subject. In many ways, it can be viewed as informal, because of its extremely colloquial style. It is flexible in nature, relies on spontaneity and qualitative observation in the method of inquiry, and is descriptive in nature (Cozby, 1985).

A Comparison of the Two Approaches

A structured approach is a type that relies on a set of standardized and premeditated questions in order to gather information. In contrast, an unstructured approach is more flexible and allows the researcher to have more freedom and personal initiatives in the different steps of the research process.

The researcher does not prepare a set of pre-planned questions while he does in a structured approach. The first is directive in nature while the second is not. In a structured approach, the researcher follows an interview sequence comprising standardized questions while in the unstructured, he does not create any sequence. In other words, it is premeditation versus spontaneity (Crano,2002).

As far as interviews in research are concerned, one striking difference is that open-ended questions do not restrict the respondent to pre-conceived options. Rather, it gives the respondent the opportunity to explore the questions from multiple perspectives and this allows the interviewer to gather a variety of information about the research theme. It is only via an unstructured approach that this is possible.

By and large, the unstructured approach is mostly used to collect data in qualitative research while the structured collects data in quantitative research. Qualitative observation is used to gather descriptive and in-depth information about a research subject while quantitative observation is used to collect measurable data. In other words, the first is used to describe data, while the second deals with numerical values (Caar and Steven, 1986).

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Think About It-

- What is meant by an enquiry mode?

- Do you feel more comfortable with the structured approach or the unstructured approach? Why?

- Do you think that questions with multiple perspectives attract more participants in interviews?

Lecture 5: The Steps of a Research Process

Introduction

The Research Process is a set of different scientific steps required to undertake research work. Each step is important and related with other steps. It is universally agreed upon that the process contains three main steps: the choice of the main research question the researcher intends to tackle, in other words the formulation of the research problem, the planning of the study which has to do with the ways to gather evidence and bring responses to the questions asked, and finally conducting the study, predominantly associated with the collection of the gathered data. Evidently in each step the researcher will be going through other "sub steps" in order to achieve a reliable and valid research study.

1-Formulating a Research Problem

In research work, a research proposal is usually required. Thus, when we write a research proposal, the detailed plan and specific objectives are a prerequisite. The first step in the process is to identify a problem or develop a research question. However, the research problem comes up with the ongoing phenomenon or issues. It may start as a general idea or a specific question, statement or thesis. A research problem is a statement about an area of concern, a condition to be improved, a difficulty to be eliminated, or a troubling question that exists in scholarly literature, in theory, or in practice that points to the need for meaningful understanding and deliberate investigation. In some social science disciplines, the research problem is typically posed in the form of a question. A research problem does not state how to do something, offer a vague or broad proposition, or present a value question.

 The next step once the general topic or problem has been identified is to state it as a clear research problem, taken from just a statement about a problematic situation to a clearly defined researchable problem that identifies the issues to address (May,1997).

Less evident however is the formulation of the research problem in a simple and clear way. In some areas of scientific research, the investigator might spend years exploring,

thinking, and researching before they are clear about what research questions they are seeking to answer. Many topics may prove too wide-ranging to provide a researchable problem. Choosing to study, for instance a social issue such as child poverty, does not in itself provide a researchable problem. The problem is too wide-ranging for one researcher to address. Time and resources would make this unfeasible and the results from such a study would consequently lack depth and focus.

2- The Planning of the Study

Planning research is an applied investigation that uses empirical observations in the development and assessment of plans or planning inquiry. It is an "applied research" strategy as the planner investigates everyday situations that are commonly faced by communities. The main purpose for research in planning is to expand on the breadth, depth, and applicability of what the planner knows about a particular topic to either serve as a foundation or improve the suitability and success of their developed plans. Accessing multiple data sets and organizing research projects around a mixed-method investigative strategy is generally standard practice in planning research. This is due to the multifaceted nature of the problems addressed that requires the planner to access different qualitative and quantitative data sets.

Evidence in research supports the argument: we have to explain the significance of the evidence and its function. What turns a fact or piece of information into evidence is the connection it has with a larger claim or argument. Evidence is always evidence for or against something, and we have to make that link clear (Nachmias, C and Nachmias, D, 1987).

3-Conducting the Study

Data collection is defined as the procedure of collecting, measuring and analysing accurate insights for research using standard validated techniques. A researcher can evaluate their hypothesis on the basis of collected data. In most cases, data collection is the primary and most important step for research, irrespective of the field of research. The approach of data collection is different for different fields of study, depending on the required information. There are a few questions to ask: the first and foremost thing

needed is to decide what the objectives of the study are. We have to ensure that we can phrase these objectives as questions or measurements. If we cannot, we are better off looking at other means of gathering data like focus groups and other qualitative methods. The data collected via online surveys is dominantly quantitative in nature (Creswell et.al, 2009).

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Think about it-

- A research problem can be a troubling question that exists in scholarly literature. Can you think of two concrete examples?

- Why is it time-consuming to identify what research question the researcher wants to answer?

- To what extent is evidence important in supporting arguments in a research project?

- Why is data collection the most important step in research?

Lecture 6: The Place of the Literature Review in Research

Introduction

An important part of the research process is literature review. It is a valuable contribution to every operational step. It gives readers an understanding of the scholarly research on the topic. In the literature review researchers demonstrate they are well-informed scholars with expertise and knowledge in the field by giving an overview of the current state of the literature. Literature review illustrates how research contributes to the scholarly conversation, and provides a synthesis of the issues, trends, and concepts surrounding this research. It is not a comprehensive history of the topic, but a way to provide context to readers about the research that has preceded the study. It is an iterative process. As the researcher reads and writes initial drafts, he will find new threads and complementary themes, at which point he will return to search, find out about these new themes, and incorporate them into his review.

1-Why do we need Literature Review in Research?

When we investigate an issue /question through a research process, we need material like literature review surveys books, scholarly articles, and other sources relevant to the points we are discussing. Literature review provides a description, summary, and critical evaluation of these works in relation to the research problem. Literature reviews are designed to provide an overview of sources we have explored while researching a particular topic and to demonstrate to readers how this research fits within a larger field of study ("The Literature Review, 2009").

Typically, a literature review may consist of simply a summary of key sources, but in the social sciences, a literature review usually has an organizational pattern and combines both summary and synthesis, often within specific conceptual categories. A summary is a recap of the important information of the source, but a synthesis is a re-organization, or a reshuffling of that information in a way that informs how the researcher is planning to investigate a research problem. The analytical features of a

literature review might give a new interpretation of old material or combine new with old interpretations.

2-What is a Good Literature Review?

Literature review does not simply reference and list all of the material you have cited in your paper. Presenting material that is not directly relevant to your study will distract and frustrate the reader and make them lose sight of the purpose of your study. Starting a literature review with "A number of scholars have studied the relationship between X and Y" and simply listing who has studied the topic and what each scholar concluded is not going to strengthen your paper. First present a brief typology that orders articles and books into groups to help readers focus on unresolved debates, inconsistencies, tensions, and new questions about a research topic. Second, summarize the most relevant and important aspects of the scientific literature related to your area of research. You can then synthesize what has been done in this area of research and by whom, highlight what previous research indicates about a topic, and identify potential gaps and areas of disagreement in the field. Finally, you can give the reader an understanding of the background of the field and show which studies are important—and highlight errors in previous studies.

3-Conception of Literature Review

One way to conceive of a literature review is to think about writing it as you would build a bookshelf. You don't need to cut each piece by yourself from scratch. Rather, you can take the pieces that other researchers have cut out and put them together to build a framework on which to hang your own "books"—that is, your own study methods, results, and conclusions.

4-What makes a Good Literature Review?

The contents of a literature review are determined by many factors, including its precise purpose in the article, the degree of consensus with a given theory or tension between competing theories, the length of the article, the number of previous studies existing in the given field, etc. The following are some of the most important elements that a literature review provides:

- A historical background for your research: Analyze what has been written about your field of research to highlight what is new and significant in your study—or how the analysis itself contributes to the understanding of this field, even in a small way. Providing a historical background also demonstrates to other researchers and journal editors your competency in discussing theoretical concepts. You should also make sure to understand how to paraphrase scientific literature to avoid plagiarism in your work.

- The current context in which your research is situated: Discuss central (or peripheral) questions, issues, and debates in the field. Because a field is constantly being updated by new work, you can show where your research fits into this context and explain developments and trends in research.

- A discussion of relevant theories and concepts that provide the foundation for your research: For example, if you are researching the relationship between ecological environments and human populations, provide models and theories that focus on specific aspects of this connection to contextualize your study. If your study asks a question concerning sustainability, mention a theory or model that underpins this concept. If it concerns invasive species, choose material that is focused in this direction.

- A definition of the relevant terminology: In the natural sciences, the meaning of terms is relatively straightforward and consistent. But if you present a term that is obscure or context-specific, you should define the meaning of the term in the Introduction section (if you are introducing a study) or in the summary of the literature being reviewed.

- A description of related research that shows how your work expands or challenges earlier studies or fills in gaps in previous work: You can use your literature review as evidence of what works, what doesn't, and what is missing in the field (How to Write a Literature Review for a Research Paper 2021).

- Supporting evidence for a practical problem or issue your research is addressing that demonstrates its importance: Referencing related research establishes your area of research as reputable and shows you are building upon previous work that other researchers have deemed significant.

5-Types of Literature Review

Literature review can be classified into several types which are largely determined by the nature and the theme of the research work.

5.1-Argumentative Review

It helps support or refute an argument, deeply imbedded assumption, or philosophical problem already established in the literature. The purpose is to develop a body of literature that establishes a contrarian viewpoint. The argumentative approach is used to analyse the literature and can be a legitimate and important form of discourse. However, it can also introduce problems of bias when used to make summary claims of the sort found in systematic reviews.

5.2-Integrative Review

The body of literature includes all studies that address related or identical hypotheses or research problems. A well-done integrative review meets the same standards as primary research in regard to clarity, rigor, and replication. This is the most common form of review in the social sciences.

5.3-Historical Review

This review focuses on examining research throughout a period of time, often starting with the first time an issue, concept, theory, phenomena emerged in the literature, then tracing its evolution within the scholarship of a discipline. The purpose is to place research in a historical context to show familiarity with state-of-the-art developments and to identify the likely directions for future research (Gilbert, 2008).

5.4-Methodological Review

This review provides a framework of understanding at different levels: theory, substantive fields, research approaches, and data collection and analysis techniques, how researchers draw upon a wide variety of knowledge ranging from the conceptual level to practical documents for use in fieldwork in the areas of ontological and

epistemological consideration, quantitative and qualitative integration, sampling, interviewing, data collection, and data analysis. This approach helps highlight ethical issues which one should be aware of and consider as they go through the study.

5.5-Systematic Review

Systematic review consists of an overview of existing evidence pertinent to a clearly formulated research question, which uses pre-specified and standardized methods to identify and critically appraise relevant research, and to collect, report, and analyse data from the studies that are included in the review. The goal is to deliberately document, critically evaluate, and summarize scientifically all of the research about a clearly defined research problem. Typically, it focuses on a very specific empirical question, often posed in a cause-and-effect form, such as "To what extent does A contribute to B?" This type of literature review is primarily applied to examining prior research studies in clinical medicine and allied health fields, but it is increasingly being used in the social sciences (Ducan,1984).

5.6-Theoretical Review

As its name suggests, theoretical review examines the theories gathered in regard to an issue, concept, theory, phenomena. The theoretical literature review helps to establish what theories already exist, the relationships between them, to what degree the existing theories have been investigated, and to develop new hypotheses to be tested. Often this form is used to help establish a lack of appropriate theories or reveal that current theories are inadequate for explaining new or emerging research problems. The unit of analysis can focus on a theoretical concept or a whole theory or framework.

6-Writing a Literature Review in Six Steps

So how do authors turn a network of articles into a coherent review of relevant literature?

Writing a literature review is not usually a linear process—authors often go back and check the literature while reformulating their ideas or making adjustments to their study. Sometimes new findings are published before a study is completed and need to be incorporated into the current work. This also means you will not be writing the literature

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review at any one time, but constantly working on it before, during, and after your study is complete. Here are some steps that will help you begin and follow through on your literature review.

- Choose a topic to write about—focus on and explore this topic: Choose a topic that you are familiar with and highly interested in analyzing; a topic your intended readers and researchers will find interesting and useful; and a topic that is current, well-established in the field, and about which there has been sufficient research conducted for a review. This will help you find the "sweet spot" for what to focus on.

- Research and collect all the scholarly information on the topic that might be pertinent to your study: This includes scholarly articles, books, conventions, conferences, dissertations and theses—these and any other academic work related to your area of study is called "the literature.

- Analyze the network of information that extends or responds to the major works in your area; select the material that is most useful (How to Write a Literature Review for a Research Paper 2021). Use thought maps and charts to identify intersections in the research and to outline important categories; select the material that will be most useful to you review.

- Describe and summarize each article—provide the essential information of the article that pertains to your study. Determine two or three important concepts (depending on the length of your article) that are discussed in the literature; take notes about all of the important aspects of this study relevant to your topic being reviewed. For example, in a given study, perhaps some of the main concepts are X, Y, and Z. Note these concepts and then write a brief summary about how the article incorporates them. In reviews that introduce a study, these can be relatively short. In stand-alone reviews, there may be significantly more texts and more concepts (How to Write a Literature Review for a Research Paper 2021).

- Demonstrate how these concepts in the literature relate to what you discovered in your study or how the literature connects the concepts or topics being discussed. In a literature review intro for an article, this information might

include a summary of the results or methods of previous studies that correspond and/or confirm to those sections in your own study. For a stand-alone literature review, this may mean highlighting the concepts in each article and showing how they strengthen a hypothesis or show a pattern. Discuss unaddressed issues in previous studies. These studies that are missing something you address are important to include in your literature review. In addition, those works whose theories and conclusions directly support your findings will be valuable to review here.

- Identify relationships in the literature and develop and connect your own ideas to them. This is essentially the same as the preceding step, but focused on the connections between the literature and the current study or guiding concepts or arguments of the paper, not only on the connections between the works themselves. Your hypothesis, argument, or guiding concept is the "golden thread" that will ultimately tie the works together and provide readers with specific insights they didn't have before reading your literature review. Make sure you know where to put the research question, hypothesis, or statement of the problem in your research paper so that you guide your readers logically and naturally from your introduction of earlier work and evidence to the conclusions you want them to draw from the bigger picture. Your review will not only cover publications on your topics but will include your own ideas and contributions. By following these steps you will be telling the specific story that sets the background and shows the significance of your research and you can turn a network of related works into a focused review of the literature (How to Write Literature Review for a Research Paper 2021).

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Think about it-

- What does literature review consist of?
- What do you think of the combination of new and old interpretations of old material in research?
- What are the types of literature review? Which one do you think suits the most your eventual research theme in Master 2?
- To what extent is the theoretical review important in research?

BENHATTAB Abdelkader Lotfi
Président du Conseil Scientifique
Faculté des langues Etrangères

Lecture 7: Constructing Hypotheses in Research

Introduction

Hypotheses are important in research for the sake of clarity and specificity. A hypothesis is a speculative statement that is subjected to verification. In formulating a hypothesis, it is important to ensure that it is simple, specific and conceptually clear, able to be verified, noted in an existing body of knowledge, and able to be operationalised. A hypothesis is a statement that introduces a research question and proposes an expected result. It is an integral part of the scientific method that forms the basis of scientific experiments.

1-What is a Good Hypothesis?

It is important to draw a hypothesis in any research work. It is entrusted with the main task of informing us about what is expected to happen through the research study. A good hypothesis may rely on previously published research based on the theory. A good research hypothesis also involves more efforts than just a guess. In particular, a hypothesis may begin with a question which could be further explored through background research. To help formulate a promising research hypothesis, we should ask the following questions: Is the language clear and focused? What is the relationship between your hypothesis and the research topic? Is the hypothesis testable? If yes, then how? These questions can be used as a checklist to make sure the hypothesis is based on a solid foundation. Furthermore, it can help identify weaknesses in the hypothesis and revise it if necessary (Kumar, 2011).

2-Types of Research Hypothesis

Research hypothesis can be classified into seven categories.

2.1-Simple Hypothesis

It predicts the relationship between a single dependent variable and a single independent variable.

2. 2- Complex Hypothesis

It predicts the relationship between two or more independent and dependent variables.

2.3- Directional Hypothesis

It specifies the expected direction to be followed to determine the relationship between variables, and is derived from theory. Furthermore, it implies researcher's intellectual commitment to a particular outcome.

2.4.-Non-directional Hypothesis

It does not predict the exact direction or nature of the relationship between the two variables. Non-directional hypothesis is used when there is no theory involved or when findings contradict previous research.

2.5-Associative and Causal Hypothesis

Associative hypothesis defines interdependency between variables. A change in one variable results in a change in the other variable. On the other hand, causal hypothesis proposes an effect on the dependent due to manipulation of the independent variable.

2.6-Null Hypothesis

It states a negative statement to support the researcher's findings that there is no relationship between two variables.

2.7-Alternative Hypothesis

It states that there is a relationship between the two variables of the study and that the results are significant to the research topic.

3-How to Formulate an Effective Research Hypothesis

A testable hypothesis is not a simple statement. It is rather an intricate statement that needs to offer a clear introduction to a scientific experiment, its intentions, and the possible outcomes. However, there are some important things to consider when building a compelling hypothesis (Kothari, 1985). The researcher needs to state the problem that he is trying to solve and make sure that the hypothesis clearly defines the topic and the focus of the experiment. Then he needs to write the hypothesis as an if-then statement. To define the variables is equally important. These fall under two categories: independent and dependent variables. Independent variables are the ones which are manipulated, controlled, or changed. Independent variables are isolated from other factors of the study. Dependent variables on the other hand are dependent on other factors of the study. They are influenced by the change in independent variables. An example of independent and dependent variables in a Hypothesis: What is the effect of diet or regular soda (independent variable) on blood sugar levels (dependent variable)? If you change the independent variable (the type of soda you consume), it will change the dependent variable (blood sugar levels) (Bulmer,1997).

The validity of the experiment and its results rely on a robust testable hypothesis. Developing a strong testable hypothesis has few advantages, it compels us to think intensely and specifically about the outcomes of a study. Consequently, it enables us to understand the implication of the question and the different variables involved in the study. Furthermore, it helps us to make precise predictions based on prior research. Hence, forming a hypothesis would be of great value to the research.

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Think about it-

- What makes a good hypothesis in research?
- How does a researcher deal with a weak hypothesis?
- Think of a concrete example of an associative and causal hypothesis in a research theme.
- What is meant by a testable hypothesis?
- Can a testable hypothesis be described as the basis of a valid experiment, and by extension, a valid research project? Justify your answer.

Lecture 8: Data Collection in Quantitative and Qualitative Research

Introduction

Whether we conduct qualitative or quantitative research, the method of data collection remains an integral part of the research process. The information collected about a situation, phenomenon, issue or group of people can come from either primary sources or secondary sources. The underlying need for data collection is to capture quality evidence that seeks to answer all the questions that have been posed. To improve the quality of information, it is expedient that data is collected so that we can draw inferences and make informed decisions on what is considered factual. Data collection is a methodical process of gathering and analysing specific information to proffer solutions to relevant questions and evaluate the results. It focuses on finding out all there is to a particular subject matter. Data is collected to be further subjected to hypothesis testing which seeks to explain a phenomenon.

1-Types of Data Collection

Data collection falls into two broad classes.

1.1- Primary Data Collection

Primary data collection is the gathering of raw data collected at the source. It is a process of collecting the original data collected by a researcher for a specific research purpose. The sources can be the national archives, presidential speeches, etc... they remain however more expensive and more time-consuming to collect.

1.2 Secondary Data Collection

It is the gathering of second-hand data collected by an individual who is not the original user. It is the process of collecting data that is already existing, be it already published books, journals, and/or online portals. In terms of ease, it is much less expensive and easier to collect. The choice between primary data collection and secondary data collection depends on the nature, scope, and area of the research as well as its aims and objectives (Bernard, 1994).

2-Importance of Data Collection

We can number five main reasons why data collection is important in any research work.

2.1- Integrity of the Research

It ensures that the integrity of the research question is indeed maintained.

2.2- Reduce the Likelihood of Errors

We typically record a lower probability of errors with a correct use of appropriate data.

2.3- Decision Making

To minimize the risk of errors in decision-making, it is important that accurate data is collected so that the researcher does not make uninformed decisions.

2.4- Save Cost and Time

Data collection saves the researcher's time and funds that would otherwise be misspent without a deeper understanding of the topic or subject matter.

2.5- To support a Need for a New idea, Change, and/or Innovation

To prove the need for a change in the norm or the introduction of new information that will be widely accepted, it is important to collect data as evidence to support these claims (Bolderston and Palmer, 2006).

3- Instruments for Collecting Data

Data collection tools refer to the devices used to collect data, such as a paper questionnaire or computer-assisted interviews. Case Studies, checklists, interviews, observations, and surveys or questionnaires are all tools used to collect data. The nature of the research theme and its aim determine which tool is more appropriate to use for the researcher. The objective behind data collection is to capture quality evidence that allows analysis to lead to the formulation of convincing and credible answers to the posed questions. There are seven main data collection methods for academic, opinion-based or product research: Reporting, existing data, observation, focus groups and

combination research, in addition to interviews and questionnaires which will be tackled separately in the following lectures.

3.1- Reporting

To report is to gather and submit data for further analysis. The key aspect of data reporting is reporting accurate data. Its advantages are informed decision-making and the fact that it is easily accessible, nevertheless; self-reported answers may be exaggerated and the results may lack objectivity.

3.2- Existing Data

It is concerned with the addition of new investigative questions to the ones originally used when the data was initially gathered. The researcher adds measurement to his research study by taking data from an archive for example. Accuracy is very high, yet there are problems with evaluation and a difficulty in understanding and interpreting the data.

3.3- Observation

Observation involves gathering data through devoting time and energy to observe the development of a given phenomenon in time and space. The nature of the observation could be accomplished either as a complete observer, an observer as a participant, a participant as an observer, or as a complete participant. This method is a key base for formulating a hypothesis. It is easy to administer, results are accurate enough and it is a universally accepted practice. It has however some disadvantages as not all phenomena are possible to observe, leading therefore to biased judgement and results. In addition, it is expensive to administer, and its validity may lack accuracy (Noble and Smith, 2015).

3.4- Focus Groups

This method of collecting data is more used in qualitative research which does not rely very much on numerical-based data. It focuses rather on data based on the feelings and opinions of the respondents. This research involves asking open-ended questions to a group of individuals usually ranging from six to ten people, to provide feedback. The

main advantage is that the information obtained is usually very detailed and reflects speed and efficiency in the supply of results, but a clear disadvantage is that results may still be biased and it requires interviewer training. Finally, and the researcher has very little control over the outcome.

3.5- Combination Research

Participation of individuals to data collection and research in general is not always easy to secure. This method is therefore used to encourage groups of participants to devote time and energy to help researchers conduct their study. Mainly, combination research is concerned with the use of innovative methods. It is an association of interviews and focus groups while collecting qualitative data. This method is key when addressing sensitive subjects. It encourages participants to give responses, stimulates a deeper connection between participants, and the relative anonymity of respondents increases participation, nevertheless; it is costly and time-consuming (Bernard, 1994).

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Think about it-

- To what extent are national archives an important primary data?
- A researcher is likely to fall into academic error. How does data collection help reduce this risk?
- What is the objective behind data collection? To what extent is it linked to credibility?
- What are the disadvantages of observation?
- How can you, as a researcher, encourage groups of participants to help you conduct your study?

Lecture 9: The Questionnaire

Introduction

The questionnaire in research is the process of collecting data via a number of questions that the researcher (interviewer) prepares to submit to a group of individuals (interviewees/participants) who are willing to answer them. Questionnaires are designed to collect data from a group of people. It is important to note here that a questionnaire is not a survey. Though the two concepts are similar, yet they differ in that the former is part of the latter which remains a broader process of data gathering involving a variety of data collection methods, including a questionnaire.

1-Types of Data collected through a Questionnaire

What is a questionnaire meant for in a research work? It involves collecting data which can be classified into three distinct categories.

1.1-Factual Data

The first section usually covers overall information (also called classification questions or subject descriptors) about the questionnaire participants. The researcher may for example use the following key items to construct the factual part of the questionnaire: How old the respondents are; whether they are male or female; where they were born and what their origin is (demographic data); where they presently live; what their current civil status is; what their educational position and occupation are, what their mother tongue and religion are etc.. ("Writing Survey Questions").

1.2-Behavioural Data

The researcher may choose to ask questions about what the respondents do (information related to current job), how they behave in the present time with regard to a given issue or how they used to behave in the past. This represents the content of the second section of the questionnaire.

1.3-Attitudinal Data

As its name suggests, this type of data in questionnaire may reveal the respondent's way of thinking in terms of attitudes, opinions, beliefs, interests and/ or values. The third section is devoted to this type of data. Let us look at these in more detail.

1.3.1-Attitudes: They are subjective and have to do with how the participants non-factually and subconsciously evaluate the target. They are exposed to others' influence and manipulations with the result of being profoundly ingrained in the mind. There is therefore a significant amount of bias here.

1.3.2-Opinions: They are also subjective but unlike attitudes, they are factual, changeable and consciously expressed by the respondent.

1.3.3-Beliefs: A belief is more strongly factually based compared with an opinion. Questionnaire items on beliefs serve to show how respondents perceive the truth bearing in mind that we can have as many perceptions of the truth as we have individuals.

1.3.4-Interests: This part tells the researcher what the participants prefer, favour, like or not.

1.3.5-Values: The way of living of a given respondent and what he considers worth practicing in life, on religious backgrounds for instance, may be pertinent in collecting such a type of data, hence the importance of investigating this side in the interviewee's aspect of life.

2-Order of Questionnaire Items

It is important that the researcher pays attention to the order of his questions before submitting them to the respondents to avoid confusing them. An inappropriate order of questions may lead the participants to perceive the questionnaire as ill-constructed and messy. As the goal is to make them feel comfortable, the researcher needs to follow a certain logical organisation and proceeding in his questionnaire elaboration by fulfilling a number of criteria in this regard. It is important to pay attention to the first opening questions which can convince or not the individual to cooperate (Cornell et.al. 1986). It is a good idea to avoid a number of questions at this stage, notably those which can be:

-a source of cognitive stress and memory effort.

- too intrusive (invading one's privacy).

-related to personal possessions.

As another illustration, questionnaire items are grouped together within sub-sections identified separately by distinct specific instructions. This separation is based on item type and topic. It can include :

-Stylistically similar items.

-Items which tackle the same theme.

Furthermore, a smooth gradual transition from general to specific related items, or what is also known as the process of narrowing down, is fundamentally required.

Additionally, a move from the easiest to the most difficult questionnaire items is also advisable. Difficult questions (including sensitive and intimate ones) should be left to the end; in case the informant does not respond to them, a wealth of data is collected by the researcher beforehand. Each response is not related only to its corresponding question but occurs in relation to all the other questions. How the degree of difficulty is recognised could be through comparing to other successful well-constructed questionnaires in literature and getting inspired by their procedures. Otherwise, the new designed questionnaire undergoes testing by means of piloting which will be discussed in the following part (Brinkmann and Kvale, 2009).

3-Piloting

A pilot study takes the form of a questionnaire testing on a sample population to simulate the extent to which it could collect credible and authentic data, and this is before administering the device to the target informants. Piloting focuses on the questionnaire weaknesses, making modifications and changes to problematic, ambiguous, sensitive, vague and difficult questionnaire items. It also allows fine-tuning the final version in terms of clarity, length, time allotted, as it indicates what should be removed, added or kept. If piloting seems a time period-consuming, it in fact allows gaining a lot time during the actual questionnaire administration and shortens safely the temporal way to data collection.

4-How to Undertake a Questionnaire Piloting

Constructive criticism is a valuable technique that the researcher is advised to use once he moves to the piloting step. Consulting trustworthy individuals or specialists if possible may be very helpful for the final version of the questionnaire elaboration and components.

Next, the researcher can select a small group of sample population and listen to their suggestions about reformulation, removal or addition of items by considering what they find problematic, ambiguous, sensitive, vague or difficult. In the end, he may also select a second ,larger if possible, group of sample population and see the quality of feedback to finish with the questionnaire elaboration. The more points of view the researcher gathers, the more objective and reliable his questionnaire will be ("Pilot testing questionnaires", 2021).

5- Advantages and Disadvantages of the Questionnaire

Questionnaires are widely used in research on account of their facility of elaboration and reliability of results. Among their advantages we can cite:

-Gathering/ collecting, in a short period of time, a huge amount of information which is more reliable and valuable for data analysis.

-Fast analysis and less effort, especially when making use of computer software.

-Low financial costs.

-Administering the questionnaire to a large number of people in different situations and about various topics.

-Because the researcher is not face to face with the respondents, there are huge chances the outcome is objective, in other words there is no interference on his behalf.

Nevertheless, we can record some advantages, among which:

-While responding, the participants time may be insufficient often engendering hasty superficial responses and information.

-Some questions may be left unanswered as the informants are sometimes demotivated to fill in questionnaires. They may not answer some questions by mistake or simply out of a lack of interest, in other words, they merely did not feel like to answer them.

-It happens that some questionnaire items could be misleading or their formulation makes them easily misinterpreted. Therefore, the obtained answers at the end of the questionnaire are considered unreliable.

-The amount of time allotted to respond to questions in a questionnaire does not always allow the researcher to verify the answer validity.

-Credibility is not always guaranteed with all the answers since it happens that a number of participants give what they judge as an answer rather than the actual response.

-Some answers are provided in such a way to retain self-worth. Here, the respondents may be "insincere" in completing the questionnaire and the researcher is again exposed to biased results (Kalton and Moser, 1989).

- The respondents' uncertainty to opt for which option, if multiple choice questions are supplied, may lead them to often agree with the answers even if this does not reflect reality.

-The researcher should also consider the way he makes his questionnaire to avoid respondents' fatigue before completing their answers.

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Think about it-

- What is the difference between behavioural and attitudinal data?
- Attitudes and opinions are similar but not identical. Discuss.
- How do beliefs affect the respondent's objectivity in answers?
- What is meant by piloting? How is it linked to constructive criticism?
- Cite some advantages and disadvantages of questionnaires.
- Elaborate a short questionnaire of your own and discuss the results.

Lecture 10: the Interview

Introduction

An interview is a face-to-face conversation between two persons, the goal being to gather relevant information for a research work. Interviews can be classified into three distinct categories: structured interviews, semi-structured, and unstructured interviews. The interview is commonly used among researchers as a means to collect data for investigation studies. The type of interviewing, its item order and the reasons behind choosing this technique are usually determined by the researcher's theme and field of investigation. The context also plays a major role in so far as the quality of data collection is concerned. The researcher should account for gender-mixed interviews which can evoke sensitivity between male/ female interviewer/ee.

1- What is an Interview?

An interview may be defined as a verbal communication controlled by scientific standards that aims primarily at data collection for investigation purposes. It is meant to cover questions and responses between the researcher (interviewer) and the informants (interviewees). The former generally questions the latter who provide answers that constitute research data.

2- Interviewing Types

Choosing one type of interviewing depends on a number of criteria: the topic of the study, the interviewees and the setting. On the one hand, interviews are structured, semi-structured or unstructured (Brinkmann and Kvale, 2009).

2.1- Structured Interviews

Structured interviews are characterised by a question-answer style in the sense that an orderly pre-determined list of questions is typically followed before addressed to the interviewees. Researchers usually choose to remove irrelevant responses during data analysis. This type is illustratively relevant in cases the interviewer/ee faces serious time shortage. Structured interviews are more appropriate for descriptive investigations.

They are characterised by lower cost and easy systematic generalisation, and require less effort on the part of the researcher. Yet, they lack naturalness and spontaneity of data.

2.2- Unstructured Interviews

Conversational in format, unstructured give the interviewee the freedom to speak their mind spontaneously with little intervention on the part of the interviewer in guiding the interview. It is appropriate to obtain detailed information about a given community and important issues. Unlike the structured interview, questions could be adjusted, eliminated or supplemented whenever necessary. The question order is not paramount. However, this type of interview leads to time-consuming data analysis and hinders comparison between different informants' recorded interviews. Unstructured interviews are more appropriate for exploratory or formulative investigations.

2.3- Semi-structured Interviews

A pre-determined list of questions addressed to the interviewees who have also the opportunity to express their thought freely within the same interview. It is useful to acquire some detailed information within a remarkably limited time period.

On another basis we can also classify interviews as:

- **Direct Interviews** which are also known as personal interviews or face-to-face interviews, they occur in the presence of both the interviewer and interviewee(s). Contact between the two parties is immediate such that the interviewer personally collects data by asking questions and obtaining answers from the interviewees (Cornell et.al. 1986).

- **Indirect Interviews** are more appropriate when the interviewer is unable to undertake a face-to-face contact with the informants due to long distance between the two parties or large number of sample population required for the investigation. In this case the indirect interview can be more relevant in the presence of another interviewer who plays the role of an intermediate researcher between the original researcher (being absent) and informants. The second

interviewer should be familiar with the research objectives and record the data obtained.

3- Interviewing Questions

Before starting the interview, the researcher is required to make the interviewee trust the project by for example highlighting confidentiality and anonymity. He should be careful with the manner of asking questions without generating sensitivity or fear of providing risky answers on behalf of the interviewee. Avoiding precipitation by giving one question after another is also recommended. It is the interviewee's right to think and understand the questions before answering. The interviewer should be sincere in research, hardworking and skilful enough to establish flexible and trustful cooperation with the informants.

4- Interviewing Order

For psychological preparation of the informants, questions should be ranged from more general to more specific: questions on professional life are more general while those on personal opinions are more specific. They should also be organised from less to more complicated/ sensitive items such that if the interviewee is noticed not to feel at ease, the interviewer is ready to move straight to the next question (Brinkmann and Kvale, 2009).

5- Access to Interviewees

Reaching a great number of interviewees may be achieved through two distinct methods:

5.1-Gatekeepers

Gatekeepers (school director, teacher, community head etc...) are those individuals whose permission is necessary to get access to interviewees. In this way, it is compulsory to go through them and follow their guidance and instructions. Yet, their position may have reluctant impacts on one's research results. To illustrate, the selection of informants will face their restrictions whenever the gatekeeper finds it necessary. Also, some selected informants feel obliged to be interviewed, a situation which could be ethically avoided by the interviewer by announcing that the informant is free to

participate or not in the interview. Moreover, the interviewer should pay great attention to the interviewees' answers which could be biased under the influence of the gatekeeper's intervention.

5.2-Snowballing

Snowballing is another way to reach interviewees through getting someone involved in the interview inviting others who will, in their turn, recommend the participation of other acquaintances. Accordingly, the number of interviewees will multiply more easily. To diversify the sample population, another way of snowballing is to rely not only on one, but different interviewees to suggest further contacts' involvement.

6- Recording

Recording requires the use of machine recorder, note-taking, writing up notes after the interview etc... Which tool would best suit the researcher is determined by the interviewee's comfort, the available material, and the research type. Let us look at these in more detail.

6.1-Machine Recorder

It helps orient the interviewer's cognitive attention and physical effort to the quality of data currently obtained, and provides the opportunity to save later the findings on more than one material (USB, tablet, laptop, mobile, desktop) to avoid data loss. On the other hand, analysing data with more concentration becomes possible at any time after the interviews and anywhere, depending on the interviewer. The disadvantage however is to use the material without the permission of the interviewee whose answers may be under the threat of bias. A noisy context also may affect the recording quality. Therefore, it is advisable to change the recording type in case of the informant's refusal or setting unsuitability (Kalton and Moser, 1989).

6.2-Note-taking

Taking notes is another alternative which requires more efforts on the part of the interviewer compared with technological recorder. During the interview, the researcher has to know what to note and what to leave depending on data importance, and this is

without missing the subsequent question. The act of note-taking is conducted under the eyes of the interviewee whose answers could be biased in this case and more probably they catch what is written from the answers and what is left. Taking answers after the interview requires memory, time and space just after the interviewing act. This technique is more advantageous if meant to add remarks or comments to the machine recording about the interviewee, setting, body language or any additional information that can facilitate later data analysis and add clarification to the findings.

7- Advantages of Interviews

Interviews have a number of advantages that facilitate the work of a researcher, among which:

-They are the source of factual information provided that the latter is not already given illustratively by the media (television, newspapers) or internet websites.

-They allow the collection of factual information about the interviewee personally and this will certainly help interpret data.

-They allow access to broad in-depth information.

-They investigate processes, motives and causes lying behind failure or success.

-They have unlike questionnaires a more qualitative nature which is able of eliciting clearer explanations lying behind specific phenomena, implicit beliefs and restraints that have contributed in framing a particular behaviour.

-The number of non-responses is largely low.

-The interviewer (direct) has the opportunity of obtaining straightforward information especially if he succeeds to get closer to the interviewee.

-The interview language is flexibly adopted according to the interviewee's educational level ("Advantages and Disadvantages of Interviews in Research").

8-Disadvantages of Interviews

On the other hand, interviews have some limitations that can more or less impact the outcome of the research work, among which:

-An issue could be raised as for representativeness. When a small number of informants are interviewed about large-scale topics concerning the community, biases, if they appear, should be mentioned in the research written production.

-Credibility of data needs to be questioned. Do the informants try to say 'the truth' or what they think is true? Do they answer what they believe the interviewer wants to know or do they answer the way they think makes them in a well-perceived position? ("The Interview Method").

-The interviewee's interpretation of the question does not always the right one.

-All answers collected through interviewing are incomplete and partially supplied.

-Interviews are tiring in terms of control and supervision.

-Interviews are generally time-consuming in the presence of a large sample population.

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Think about it-

- Discuss the difference between structured and unstructured interviews.
- How can a researcher attract the interviewees to participate in in the interview?
- Is the order of questions important in an interview? Why?
- Can gate-keepers be an obstacle to a large and effective participation in an interview?
- Compare machine recording and note-taking, which one do you prefer? Justify your answer.
- Discuss some advantages and disadvantages of interviews.
- In the light of the preceding lecture, would you choose the questionnaire or the interview for your research? Why?

Lecture 11: The Validity and Reliability of a Research Tool

Validity and Reliability: Definition

The validity and reliability of a research work are two major prerequisites for any research work. The former is defined as the extent to which a concept is accurately measured in a quantitative study while the latter is rather a measure of quality in a quantitative study or the accuracy of an instrument. In other words, the extent to which a research instrument consistently has the same results if it is used in the same situation on repeated occasions. It is important to consider validity and reliability of the data collection tools (instruments) when conducting research.

1-Types of Validity

Validity is the extent to which the scores from a measure represent the variable they are intended to. But how do researchers make this judgment? There has to be more to it, however, because a measure can be extremely reliable but have no validity whatsoever. As an absurd example, imagine someone who believes that people's index finger length reflects their self-esteem and therefore tries to measure self-esteem by holding a ruler up to people's index fingers. Although this measure would have extremely good test-retest reliability, it would have absolutely no validity. The fact that one person's index finger is a centimetre longer than another's would indicate nothing about which one had higher self-esteem.

Discussions of validity usually divide it into several distinct "types." But a good way to interpret these types is that they are other kinds of evidence—in addition to reliability—that should be taken into account when judging the validity of a measure. Here we consider three basic kinds: face validity, content validity, and criterion validity (Reliability and Validity of Measurement, 2015).

1.1-Face and Content Validity

Face validity considers how appropriate the content of a particular test looks on the surface. It seems quite similar to the content validity, but it is considered to be a more

subjective and informal type of assessment. Being a subjective measure, face validity is usually referred to as the weakest type of validity, although it can play a key role in the foundational stages of creating a method. Content validity on the other hand is used to check whether a test can represent the different aspects of a specific construct or not. In order to generate valid results, it is essential that the content of the survey, test or any measurement method used covers the relevant and necessary areas of the subject it intends to measure. In case there are some missing/irrelevant aspects in the measurement, the validity is at stake (Korb, 2012).

1.2-Criterion Validity

Criterion validity is used to evaluate the relativity of the test results: how closely a test's results correspond to another test's results. A criterion can be defined as an external measurement of a similar thing. In other words, it is a widely popular and established test that has been considered valid already. A good evaluation of criterion validity should primarily consider the correlation that exists between the measurement's results and the criterion measurement's results. In case we get a high correlation, this will indicate that the test is actually measuring what it is supposed to measure. For example, a teacher develops a new test for measuring the English writing abilities of the students. To evaluate how well the test measures these writing abilities, the teacher looks for an existing test that can be a valid measurement of the student's writing abilities. When the same students participate in both tests, the results are compared. If the outcomes come out to be similar, the new test is considered to have a high criterion validity.

1.3-Construct Validity

Construct validity represents a collection of behaviours associated in a meaningful way to create an image or an idea invented for a research purpose. Construct validity is the degree to which the research measures the construct The existence of a construct is manifest by observing the collection of related indicators. Any sign may be associated with several constructs. Construct validity is the degree to which inferences can be made from operationalizations (connecting concepts to observations) in the study to the constructs on which those operationalizations are based. To establish construct validity, we must first provide evidence that the data supports the theoretical structure, and show

we control the operationalization of the construct, in other words, that the theory has some correspondence with reality (Ghauri and Gronhaug,2005).

2-Reliability

Reliability is subject to a number of factors, among which:

- **The choice of words and phrases in questions:** The choice of words and phrases in a question is paramount as it may affect the meaning and intent of the question to the respondent. It allows the researcher to make sure all respondents interpret the question in the same way. Even small wording differences can substantially affect the answers people provide.

- **The physical Setting:** In the case of an instrument being used in an interview, any change in the physical setting at the time of the repeated interview may affect the responses given by the respondent, which may, in their turn, affect reliability.

- **The influence of the mood of the informant:** A change in the respondent's mood when responding to questions in a questionnaire can change, and may therefore affect the reliability of the instrument.

- **The interviewer's mood:** As the mood of a respondent could change from one interview to another so could the mood motivation and interaction of the interviewer which could affect the responses given by respondents thereby affecting the reliability of the research instrument.

- **The nature of interaction:** The interaction between the interviewer and the interviewee can affect responses significantly. During the repeat interview, the responses given may be different due to a change in interaction which could affect reliability.

- **The regression effect of an instrument:** When an instrument is used to measure attitudes towards an issue, some respondents, after having expressed their opinion, may feel that they have been either too negative or too positive towards the issue. The second time they may express their opinion differently, thereby affecting reliability.

On the other hand, reliability refers to the consistency of a measure. Psychologists consider three types of consistency: over time (test-retest reliability), across items (internal consistency), and across different researchers (inter-rater reliability).

When researchers measure a construct that they assume to be consistent across time, then the scores they obtain should also be consistent across time. It is the extent to which this is actually the case. For example, intelligence is generally thought to be consistent across time. A person who is highly intelligent today will be highly intelligent next week. This means that any good measure of intelligence should produce roughly the same scores for this individual next week as it does today. Clearly, a measure that produces highly inconsistent scores over time cannot be a very good measure of a construct that is supposed to be consistent.

Assessing test-retest reliability requires using the measure on a group of people at one time, using it again on the same group of people at a later time, and then looking at test-retest correlation between the two sets of scores. This is typically done by graphing the data in a scatterplot. Again, high test-retest correlations make sense when the construct being measured is assumed to be consistent over time, which is the case for intelligence, self-esteem, and the Big Five personality dimensions. But other constructs are not assumed to be stable over time. The very nature of mood, for example, is that it changes. So a measure of mood that produced a low test-retest correlation over a period of a month would not be a cause for concern.

A second kind of reliability is internal consistency , which is the consistency of people's responses across the items on a multiple-item measure. In general, all the items on such measures are supposed to reflect the same underlying construct, so people's scores on those items should be correlated with each other. On the Rosenberg Self-Esteem Scale, people who agree that they are a person of worth should tend to agree that that they have a number of good qualities. If people's responses to the different items are not correlated with each other, then it would no longer make sense to claim that they are all measuring the same underlying construct. This is as true for behavioural and physiological measures as for self-report measures. For example, people might make a series of bets in a simulated game of roulette as a measure of their level of risk seeking. This measure

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would be internally consistent to the extent that individual participants' bets were consistently high or low across trials. Like test-retest reliability, internal consistency can only be assessed by collecting and analyzing data. One approach is to look at a split-half correlation. This involves splitting the items into two sets, such as the first and second halves of the items or the even- and odd-numbered items. Then a score is computed for each set of items, and the relationship between the two sets of scores is examined.

Many behavioural measures involve significant judgment on the part of an observer or a rater. Inter-rater reliability is the extent to which different observers are consistent in their judgments. For example, if you were interested in measuring university students' social skills, you could make video recordings of them as they interacted with another student whom they are meeting for the first time. Then you could have two or more observers watch the videos and rate each student's level of social skills. To the extent that each participant does in fact have some level of social skills that can be detected by an attentive observer, different observers' ratings should be highly correlated with each other (Reliability and Validity of Measurement, 2015)

3-Validity and Reliability in Qualitative Research

The validity and reliability of the scales used in research are important factors that enable the research to yield healthy results. For this reason, it is useful to understand how the reliability and validity of the scales are measured correctly by researchers. The main purpose is to provide information on how the researchers test the validity and reliability of the scales used in their empirical studies and to provide resources for future research.

In quantitative research, most of the predictor and outcome variables are abstract concepts known as theoretical structures (Maşlakçi and Sürücü, 2020).

The use of a valid and reliable measuring instrument to measure such abstract concepts is an essential factor in determining the quality of the research. Therefore, if researchers pay attention to validity and reliability throughout their research, it is thought that valid and reliable findings will be obtained. The validity of the measurement instrument to measure accurately without confusion with another feature is defined as "validity". Validity is the degree to serve by the intended use of the scale. Reliability is that the

measurement instrument gives consistent results under the same circumstances ("Conducting Educational Research"). When the existing definitions are examined, it is clear that validity and reliability are two critical features that should be present in every measurement instrument in any research work. They are key aspects can make the difference between good research and poor research and can help to assure that fellow scientists accept findings as credible and trustworthy. This is particularly vital in qualitative work where the researcher's subjectivity can so readily cloud the interpretation of the data, and where research findings are often questioned or viewed with scepticism by the scientific community (Validity And Reliability In Qualitative Research, 1993).

There are many types of validity and many names have been used to define the different types of validity. Campbell and Stanley (1966) have defined two major forms of validity that encompass the many types. They refer to "internal" and "external" validity, terms which are today used in most nursing research textbooks. Denzin (1970) used the distinction between internal and external validity and applied it to qualitative research. Item validity is the term used to refer to the extent to which research findings are a true reflection or representation of reality rather than being the effects of extraneous variables. External validity addresses the degree or extent to which such representations or reflections of reality are legitimately applicable across groups. Reliability is concerned with the consistency, stability and repeatability of the informant's accounts as well as the investigators' ability to collect and record information accurately (Selltiz et al 1976:182). It refers to the ability of a research method to yield consistently the same results over repeated testing periods. In other words, it requires that a researcher using the same or comparable methods obtained the same or comparable results every time he uses the methods on the same or comparable subjects. It further requires that the researcher has developed consistent responses or habits in using the method and scoring or rating its results and that factors related to subjects and testing procedures have been managed to reduce measurement error. Many qualitative researchers avoid the terms validity and reliability and use terms such as credibility, trustworthiness, truth, value, applicability, consistency and confirmability, when referring to criteria for evaluating

the scientific merit of qualitative research (Validity And Reliability In Qualitative Research, 1993).

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Think about it-

- What is one pre-requisite in order to generate valid results in research?
- How does popularity impact the validity of a research result?
- How is construct validity established?
- What may lead respondents to modify their responses a second time? Do you think this affects reliability?
- Compare briefly validity and reliability.

Lecture 12: Writing a Research Proposal

What is a Research Proposal?

A research proposal details the operational plan for obtaining answers to research questions. It shows what the researcher proposes to do, how he plans to proceed and why he chose this strategy in particular. It thus assures readers of the validity of the methodology used to obtain answers accurately and objectively. A research proposal is a concise and coherent summary of the proposed research. It sets out the central issues or questions to be addressed. It outlines the general area of study within which research falls, referring to the current state of knowledge and any recent debates on the topic. It also demonstrates the originality of the proposed research.

1-The Purpose of a Research Proposal

The purpose of a research proposal is to propose a research project that will result in a significant contribution to knowledge and to formulate a detailed plan of the project including methodological approach and theoretical framework. It ensures that the proposed research is achievable within the required time and with the available resources. Moreover, it demonstrates that the researcher has adequate expertise and experience to undertake the project. Even if the completion of a research proposal is not a requirement, it is a good idea to write one. Writing a research proposal will encourage the researcher to clarify his objectives and key ideas. It will enable him to think about each stage of the research process so that he can develop a clear and detailed plan. It will also help him to foresee problems that he may encounter and prompt him to think about how he will manage them when they arise ("How to Write a Research Proposal").

The preparation of a research proposal is needed because it facilitates the smooth sailing of the various research operations, thereby making research as efficient as possible yielding maximal information with minimal expenditure of effort, time and money. In

fact the research proposal is the conceptual structure within which research is conducted; it constitutes the blueprint for the collection, measurement and analysis of data. As such the proposal includes an outline of what the researcher will do from writing the hypothesis and its operational implications to the final analysis of data. More explicitly, the research proposal concentrates on the following issues-

- What is the study about?
- Why is the study being made ?
- Where will the study be carried out?
- What type of data is required?
- Where can be the required data found?
- What periods of time will the study include?
- What will be the sample design?
- What techniques of data collection will be used?
- How will the data be analyzed?
- In what style will the report be prepared?

These questions will be answered in different ways and receive different emphases depending on the nature of the proposed project. Detailed instructions or guidelines concerning the preparation of proposals (and, in some cases, forms on which proposals are to be typed) are generally proposed. Obviously, such guidelines should be studied carefully before the researcher begins writing the draft. The proposal should be no longer than 1500 words (not including references).

A research proposal is a summary of the plan of the whole dissertation. It is intended that this will :

- Help to order thoughts;
- Present the preparatory material in a logical way;
- Highlight the way in which each section interrelates with the others;
- Assist the researcher in defining the boundaries of the study and the concepts to be included.

The more the researcher sorts out his ideas at this stage, the more effectively he will use his time.

2-Types of Research Proposal

In all sectors, research scientists typically seek and obtain competitive funding for their research projects by writing and submitting research proposals for consideration by the funding source. There are different kinds of research proposals. Each type of proposal, outlined below, may have its own requirements or qualifications -

- **New Proposal:** A proposal submitted to a sponsor for the first time, or a proposal being resubmitted after having been declined.
- **Revised Proposal:** This modifies a proposal that is pending or is otherwise unfunded.
- **Supplemental Proposal:** A supplemental proposal asks for an increase in support for a proposal that has already been funded.
- **Continuation Proposal:** A continuation applies to a multi-year award. The continuation proposal requests the already approved funds for the next phase (or next year) of the project (Sayed Muhammad,2016).

3-Contents of a Research Proposal

3.1-Title

The researcher suggests a title that he can eventually modify as the research work evolves.

3.2-Abstract

An abstract is a part of 100-150 words that the researcher must write with the aim of setting out the problem to be examined or the central question that he intends to approach. The abstract also contains the findings at which the researcher arrives at the end of his work.

3.3-Research Context

The researcher has to clarify the general context within which his research study will be conducted. This is important as it includes an overview of the general area of study within which the proposed research falls, summarising the current state of knowledge and recent debates on the topic. This will allow him to demonstrate a familiarity with the relevant field as well as the ability to communicate clearly and concisely ("Writing a Research Proposal").

3.4-Research Questions

The proposal should contain the main questions that the researcher attempts to answer through his research work. Many research proposals are too broad, so reflecting on the key research questions is a good way to make sure that the project is sufficiently narrow and feasible. The researcher might find it helpful to prioritize one or two main questions, from which he can then derive a number of secondary research questions. The proposal should also explain the intended approach to answering the questions: will the approach be empirical, doctrinal or theoretical etc?

3.5-Research Methods

The researcher conducts his research after having selected a specific research method. At this step of the work, he should explain the how and why of this/these method(s).

The methods may include visiting particular libraries or archives, field work or interviews. Most research is library-based. In this case, the researcher should explain where the key resources are located. If he plans to conduct field work or collect empirical data, he should provide details about this (e.g., if he plans interviews, who will he interview? How many interviews will he conduct? Will there be problems of access?). Additionally, he should explain how he is going to analyse the research findings (Walter, 2006).

3.6-Originality of Research

A good research work should always bring about new elements to be added to the current knowledge on the theme/discipline, and this is where the importance of research lies. Accordingly, the researcher has to underline the newness in his work and to what extent the latter contributes to the enrichment of current knowledge in his field of study.

The researcher should also explain the reasons/motives behind the choice of his theme, underlining once more its importance.

Therefore, the requirement to write an original research paper is to bring about an original content, free of plagiarism, a piece of work done on the researcher's own, honesty being the watchword. Obviously, using some research resources to document the paper is not only possible but is an academic obligation. "An original research paper that is used in academia... ...produces new knowledge instead of summarizing what is already known in a new form. There are many ways to produce new knowledge: observations, experiments, new approaches to solving existing problems, etc" (Original Research Papers n.d).

3.7-References

The proposal should include a list of references, ranging from primary sources (published or unpublished), books, journal articles, websites, etc...These should be relevant for the topic and may incite for further and deeper readings on the theme.

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Think about it-

- What is a research proposal? Is its originality important? Why?
- Is the researcher impelled to be familiar with the research theme chosen? Does this affect his ability to communicate?
- How to avoid too broad questions? What should the researcher prioritize?
- What do you think of *field work* as a research method?
- Originality in research is an effective way to avoid academic fraud (plagiarism). Discuss.

Lecture 13: Processing Data in Research

1-What is meant by data processing?

At first sight, it may seem that how and where from to collect information for one's theme is the most laborious task in research. As the study moves along, the researcher realises that analysing this information, which we are going to refer to here as data, is not an easy assignment. Whether he chooses a qualitative or a quantitative method of data collection, processing it should comprise all operations undertaken from when a set of data is collected until it is ready to be analysed either manually or by a computer. Data processing is concerned with editing, coding, classifying, tabulating and charting and diagramming research data. Another challenge that the researcher may encounter is data reduction. He has at this stage of the work to get rid of any irrelevant data, establish order when presenting it, and finally give it a clear shape.

2-Steps of Data Processing

When processing data in research, a researcher goes through five distinct stages:

2.1- Editing

Editing is the process of examining the data collected in questionnaires/schedules to detect errors and omissions and to make sure data is ready for tabulation. It is often necessary to verify one's data when the collection is finished to ensure it is accurate, and consistent with other facts secured, uniformly entered, as complete as possible, and acceptable for tabulation and arranged to facilitate coding tabulation ("What is Data Processing"?).

2.2- Coding

Coding is meant to analyse the several replies which contain the critical information required for analysis. Coding decisions should usually be taken early enough in the

research work to allow the pre-coding of the questionnaire choices. Pre-coding can help significantly the researcher in computer tabulation as he can straight forward key punch from the original questionnaires.

But in case of hand coding some standard method may be used. One such standard method is to code in the margin with a coloured pencil. The other method can be to transcribe the data from the questionnaire to a coding sheet. Whatever method is used, the researcher should see that coding errors are altogether eliminated or reduced to the minimum level.

Coding is the process whereby responses are organized into categories and numerals or other symbols are given to each item according to the class in which it falls. Coding involves two important operations, the first decides the categories to be used and the second allocates individual answers to them. These categories should be appropriate to the research problem. Since coding eliminates much of the information in the raw data, it is important that the researcher designs category sets carefully in order to use the available data more fully.

The study of the responses is the first step in coding which begins at the preparation of interview schedules. The researcher subsequently moves to coding frame which is meant at listing the possible answers to each question and assigning code numbers or symbols to each of them. The coding frame is an outline of what is coded and how it is to be coded. It is a set of explicit rules and conventions that are used to base classification of observations variable into values which are which are transformed into numbers. Next, the gradual process of fitting the answers to the questions must start, followed by transcription which involves transferrin information from the schedules to a separate sheet called transcription sheet. A transcription sheet is a large summary sheet which contain the answer/codes of all the respondents (Smith, 1991).

2.3- Classification

Classification is the process of gathering the statistical data under various homogeneous groups for the purpose of convenient interpretation. The grouping of data is made according to similarity. Classification becomes necessary when there is a diversity in

the data collected. The prerequisites of a good classification are: clarity, homogeneity, equality of scale, purposefulness and accuracy.

Classification falls into two categories: quantitative and qualitative. Quantitative classification relies on variables or quantity, while a qualitative classification is based on attributes. The former is the way of grouping variables or quantifying them in cohesive groups, while the latter groups the data on the basis of attributes or qualities. Again, it may be multiple classification or dichotomous classification. The former is the way of making many (more than two) groups on the basis of some quality or attributes while the latter is the classification into two groups on the basis of presence or absence of a certain quality. Grouping the workers of a factory under various income (class intervals) groups come under the multiple classification; and making two groups into skilled workers and unskilled workers is the dichotomous classification. The tabular form of such classification is known as statistical series, which may be inclusive or exclusive ("Methods of Data Processing").

2.4- Tabulation of Data

Tabulation is the process of summarizing raw data and displaying it in compact form for further analysis. Therefore, preparing tables is a very important step. Tabulation may be by hand, mechanical, or electronic. The choice is made largely on the basis of the size and type of study, alternative costs, time pressures, and the availability of computers, and computer programmes. If the number of questionnaires is small, and their length short, hand tabulation is quite satisfactory.

2.5- Data Diagrams

Diagrams are charts and graphs used to present data. These facilitate getting the attention of the reader. They help presenting data more effectively. Creative presentation of data is possible. The data diagrams are classified into:

- **Charts:** A chart is a diagrammatic form of data presentation. Bar charts, rectangles, squares and circles can be used to present data. Bar charts are uni-dimensional, while rectangular, squares and circles are two-dimensional.

- **Graphs**: The method of presenting numerical data in visual form is called graph, A graph demonstrates the relationship that exists between two variables by means of either a curve or a straight line. Graphs may be divided into two categories: graphs of time series and graphs of frequency distribution. In the former, the primary factor is time, while the latter is concerned with the study factors. Graphs on frequency may show for instance the distribution by income, age, etc…(Newhart and Patent, 2017).

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Think about it-

- Data processing is a laborious task for the researcher. What can help facilitate it?
- Which step of data processing is most time-consuming? Why?
- What are the different pre-requisites of a good classification of data?
- How do charts and graphs help in result analysis in research?

Lecture 14: Displaying Data in Research

1-Displaying Data: Definition and Importance

The research process is achieved through a number of stages the last of which is displaying data. Its importance lies in its accuracy as the reader can finally have a clear image of the outcome of the research. The purpose of displaying data is therefore to clarify findings and facilitate comparisons. When the research work is presented in front of a research committee, understanding of the findings of this research is allowed by displayed data. Without displayed data, the whole looks too scattered and the reader cannot make inferences. Globally, data is displayed trough two main tools: tables and graphs. The tabulated data and the graphical representation should be used to give a more accurate picture of the research. In quantitative research, it is necessary to display data. In qualitative research, the researcher decides whether there is a need to display data or not. The researcher can use an appropriate software to help tabulate and display the data in the form of graphs. Microsoft excel is one example (Verdinelli, 2013).

2-Tables for Displaying Data in Research

The use of tables to display data is very common in research. Tables are very effective in presenting a large amount of data. They organize data well and make it visible. A badly tabulated data may also occur when the researcher is not familiar enough with the process, in this case, it is advisable to seek the help of a professional (a statistician).

3-Parts of a Table

A good and clear table in research should contain the following parts:

3.1-Title

The title displays the contents of the table. It has to be concise and written in sentence case.

3.2-Stub

A stub is the column at the left-most of the table. It has a stub-heading at the top of the column. It shows the subcategories that are listed along Y-axis (the vertical axis). It is of note here that not all tables have stubs.

3.3-Caption

The caption is the column heading, the variable might have subcategories which are captioned. These subcategories are provided on the X-axis (the horizontal axis), the captions are provided on the top of each column.

3.4-Body

The body of the table is the actual part of the table that includes the whole values, results, and analysis.

3.5-Footnotes

The researcher will often need to clarify some points in the table by adding some notes at its end. The footnotes are provided just below the table and labelled as the source. The source is generally provided when the table has been taken from some other source.

4-Graphs to Display Data

As displaying data is meant at facilitating communications and data understanding, graphs should be used in displaying data when they can add to its visual beauty. It is up to the researcher to decide whether there is a need for table only or he should also present data in the form of a suitable graph (Hessler, 1992).

5-Types of Graphs

Depending on the data the researcher wants to display, the creation of a graph may be very useful. A graph can capture a lot of information and should not be designed to take up space but to tell the reader something specific about the data. Developing graphs can be done in a very creative way. There are several types of graphs:

5.1-Histogram

A histogram is an approximate representation of the distribution of numerical data. It is used to show frequency distribution and provides a visual representation of a large amount of data.

5.2- Line Chart

A line chart is ideal for showing the changes that one variable has undergone over time (time being one of the two variables). It is used when the researcher is examining the relationship between two variables.

5.3-Pie Chart

A pie chart is a circular statistical graphic which is divided into slices to illustrate numerical proportion. However, researchers are not very keen on using it on account of a lack of natural scale for communicating data to readers, and the fact that it gets crowded very quickly ("What is Data Interpretation?"2022).

5.4-Scatter Plot

A scatter plot is ideal when the researcher wants to display the relationship between two continuous variables. It uses dots to represent values for two different numeric variables. The position of each dot on the horizontal and vertical axis indicates values for an individual data point. A scatter plot is useful when:

- you have paired numerical data
- your dependent variable may have multiple values for each value of your independent variable
- trying to determine whether the two variables are related, such as:
  - trying to identify potential root causes of problems

  -After brainstorming causes and effects using a fishbone diagram to determine

  objectively whether a particular cause and effect are related

  -When determining whether two effects that appear to be related both occur

  with the same cause

-When testing for autocorrelation before constructing a control chart (What is a

Scatter Diagram? Scatter Plot Graphs)

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Think about it-

- What are the two main tools to display data? Is displaying data necessary in both qualitative and quantitative research?
- How important is the organisation of tables in displaying data?
- Do graphs only serve for visual beauty purposes?
- What is the use of a pie chart?
- Imagine a scatter plot for some research results you want to display.

Lecture 15: Writing a Research Report

Introduction

The last step in the research process is writing the research report. It is the most crucial as it is through the report that the findings of the study and their implications are communicated to readers. Each step of the process is important for a valid study as negligence at any stage will affect the quality of not only that part but the whole study. Styles of research writing vary markedly among researchers but all research reports must be written clearly and concisely. Furthermore, scientific writing requires intellectual rigour and there are certain obligations in terms of accuracy and objectivity.

A good research report should contain:

1-The Outline

The outline is the skeleton of the research paper. If it is badly written/structured, then there are few chances the work will be good. The researcher should start by writing the main ideas he intends to present. This is of course subject to subsequent changes as the work evolves so, it is not very important to be too specific in the early stages of writing the outline. Next, the researcher needs to extend and organise it. A research paper outline typically contains between two and four layers of organisation. The first two layers are the most generalised. Each layer will present more detailed information. The levels are typically represented by a combination of Roman numerals, Arabic numerals, uppercase letters, lowercase letters but may include other symbols. The researcher should refer to the guidelines provided by his institution, as formatting is not universal and differs from one university to another, and from one field to another (Mc Combes, 2019).

The first level of organisation of an outline is the most generalized level of information. The researcher starts by numbering the introduction and the conclusion, in addition to each idea presented. The main ideas contain the bulk of the research paper's information. Depending on the research, it may be chapters of a book for a literature review, a series of dates for a historical research paper, or the methods and results of a scientific paper.

The second level or organization consists of topics which support the introduction, main ideas, and the conclusion. Each main idea should have at least two supporting topics listed in the outline.

The third level of organization contains supporting information for the topics previously listed. At this stage, the researcher should have completed enough research to add support for his ideas. The introduction and main ideas may contain information he discovered about the author, timeframe, or contents of a book for a literature review; the historical events leading up to the research topic for a historical research paper, or an explanation of the problem a scientific research paper intends to address.

The fourth level of organization contains the most detailed information such as quotes, references, observations or specific data needed to support the main idea. It is not typical to have further levels of organization because the information contained here is the most specific.

How to Write a Good Outline?

Here are some tips to help the researcher write a good outline:

- Be consistent: ensure every heading has a similar tone. State the topic or write short sentences for each heading but avoid doing both.
- Organize information: higher levels of organization are more generally stated and each supporting level becomes more specific. The introduction and conclusion will never be lower than the first level of organization.
- Build support: each main idea should have two or more supporting topics. If the research does not have enough information to support the main idea the researcher is presenting, then a revision of the outline is often needed ("How to Write a Research Outline").

2-Writing about a Variable

Once the outline is complete, the researcher can start writing. The next step is to obtain information in response to a question(variable). Though the way the researchers organise their writing is extremely individualised, the following guidelines and format

may prove helpful. When writing, the researcher may focus on the importance to study the variable, and inquire into any eventual relationship that other studies have found between the variables that are being analysed. Additionally, he can examine the relationship between the two variables, stressing in way the outcome of his study, usually shown through tables and graphs. Subsequently, the researcher can move to the interpretation of the findings, in other words, what the data he collected display. In the end, he can ask questions about what conclusions are to be drawn from his analysis, and what explanations he can provide for the findings of his study (Kumar, 2011).

The last thing that the researcher has to do is to write down a list of the material he previously used to collect information from. This is called a list of references. References will begin on their own page at the end of the research paper. After the draft is complete, format is required. The researcher may choose between MLA and APA styles, though there are others, but these remain the most commonly used. MLA and APA differ mainly in bibliography page, in-text citations, line spacing, and titles.

3-Referencing

An academic style of referencing should be respected. Basically, there are four referencing systems:

- The short-title system
- The author-date system
- The reference by number system
- The author-number system

The researcher needs to adopt the one that most fits his academic discipline. The first is used in most general books, the second mainly in science and social science books, while the third and the fourth are less frequently used. When writing a bibliography, there are also well-established systems, and the choice depends again on the discipline. In the social sciences, some of the most commonly used ones are: the Harvard system, the American Psychological Association system, The American Medical Association system, the Modern Languages Association system and the Chicago style ("A Manual for Referencing Styles" 2016).

Looking briefly at each one of these styles is useful. The Harvard referencing style uses the author-date system for in-text citations. It consists mainly of the authors' last name and the year of publication. Page numbers are needed if it is directly quoted in round brackets placed within the text. If there is no discernable author, the title and date are used.

The reference list should be ordered alphabetically by the last name of the first author of each work. When the author is unknown, the source can still be used according to an alphabetical order starting with the first significant word of the title. Only the initials of the authors' given names are used. No full stop nor space between the initials starting with the last name.

Electronic sources are also another modern source of data upon which more and more researchers rely. These range from full-text journals, newspapers, company information, e-books to dictionaries, encyclopaedias, economic data, digital images, industry profiles, market research… Referencing these online sources can be confusing. It is difficult to know which information to include or where to find it. As a rule, the researcher needs to provide as much information as possible concerning authorship, location and availability. Electronic sources require much of the same information as print sources (author, year of publication, title, publisher). However, in some cases extra information may be required:

1-the page, paragraph or section number—what is cited will depend on the information available as many electronic or online sources do not have pages.

2-identify the format of the source accessed, for example, E-book, podcast…

3-provide an accurate access date for online sources, identify when a source was viewed or downloaded

4-provide the location of an online source, for example, a database or web address (Harvard Referencing – The 'In-text' System n.d).

The MLA referencing style is most commonly used with the APA which will be dealt with later in this lecture. Generally, the reference list, which starts on a separate page at the end of the dissertation/thesis/work is called *Works Cited* and includes details of the

sources cited in the paper. Each item in the *Works Cited* list must have been cited in the work, sources must be ordered alphabetically by surname or by title if there is no author and authors' names should be provided as they appear on the source. First names and initials are included when available. It is also acceptable to break the list of works cited into categories such as primary and secondary sources, or by source type.

There is sometimes a need to include sources that are not cited in the paper but which supported the research. When non-cited sources are listed together with cited sources, the list is called *Works Consulted*. As with the *Works Cited* list, the items should be listed in alphabetical order. References longer than one line should be indented on the second and subsequent lines of each entry (hanging indent starting a half inch or 1.27cm from the left margin). Titles of books, journals and other independent sources are placed in italics. Article and chapter titles are placed within double quotation marks but are not italicised. All major words of a title should be capitalised. Initial articles (a, an, the) from the beginning of a title in a *Works Cited* list should not be omitted but are not used to place the title in alphabetical order (Western Sydney University n.d).

The apa referencing style on the other hand is most commonly used in social sciences. It suggests using a *Reference List* for references cited in the text of a paper rather than a *bibliography*. A reference list includes only those references which were actually cited in the paper. There must be a total agreement between the two as opposed to a bibliography which includes all literature consulted that was "immediately relevant" to the research process, even though the material was not cited i" the paper.

When compiling a reference list in APA style, one needs to pay particular attention to the following: sequence, punctuation and spacing, capitalization and underlining. Sources are arranged in alphabetical order by surname of the first author. Single-author entries precede multiple-author entries beginning with the same surname: Kaufman, J. R. (1981)/ Kaufman, J. R., & Cochran, D. C. (1978). For references with the same first author and different second or third authors, sources are arranged alphabetically by the surname of the second author, and so on. References with the same authors in the same order are arranged by year of publication, the earliest first. For the order of several works by different authors with the same surname, sources are arranged alphabetically by the

first initial, for example, Eliot, A. L. (1983) / Eliot, G. E. (1980) (Toledo University, n.d).

The AMA style is another referencing style in research. The major parts of a reference are authors, title, publication details including the publication year. The authors follow the pattern of surname initials (e.g., Brown JA) and are separated by a comma. If there are more than six authors, only the first three names are listed, then shortened with et al. (e.g., Smith AA, Jones BA, Bloggs JC, et al.) The title, whether journal article, book chapter or web object is always in sentence case and not in italics. The publication details change depending on the type of source cited (journal article, book chapter, etc). For electronic sources, the DOI is used if available, otherwise an URL if it is relevant. In this case, an accessed date is included (James Cook University n.d).

The Chicago citation format in referencing was established by the University of Chicago Press for documenting sources used in a research paper. References appear in the form of footnotes at the bottom of the page that contains the cited text. Endnotes follow the same citation style, but are listed together at the end of the paper before the bibliography. The footnotes should be numbered consecutively throughout the paper, with the footnote number inserted after the punctuation. A full citation is included when used for the first time. For all subsequent references to that text, they will be in abbreviated form. Authors' names are cited as they appear in the texts, first names should not be replaced with initials unless they appear this way on the title page of the source. If no author is listed, the entry is organised by title.

When referencing, the order is as follows: author's first name, last name, title in italics and in Headline Style (city of publication, publisher, year) and page number if relevant.

Subsequent references to the same text are presented as follows: last name, title in shortened form and page number. If the second reference to the text comes immediately after the first, "Ibid." is used in place of the author's name and the book title but the page number is included if different from that listed in the first reference.

Examples:

1. Kent Portney, Taking **Sustainable Cities Seriously (Cambridge:** MIT Press, 2003).

2. Ibid., 162.

For the bibliography, the order followed is the author's last name, first name, title, city: publisher, year.

Examples:

1-Harvey, David. The Condition of Postmodernity: An Enquiry into the Origins of Cultural Change. New York: Blackwell, 1989.

2-Portney, Kent. Taking Sustainable Cities Seriously. Cambridge, MIT Press, 2003.

3-Self, Robert O. American Babylon: Race and the Struggle for Post-war Oakland. Princeton: Princeton Univ. Press, 2003.

For two or three authors, each of the authors is listed in the order presented on the title page of the book. For more than three authors, the first author's name is followed by "and others" or "et al.".

For electronic sources, not all information available on the internet should be considered a valid source for academic research. Common sense will decide what internet sites to include in research. For example, *98ikipedia.org* is generally not considered an appropriate source of information for an academic paper. The following will help determine the validity and reliability of the source. It is important to evaluate each source to determine the quality of the information provided within it. Common evaluation criteria include: purpose and intended audience, authority and credibility, accuracy and reliability, currency and timeliness, and objectivity or bias.

-Purpose and intended audience

- What is the purpose of the source? For example: To provide information (e.g., newspaper articles), to persuade or advocate (e.g., editorials or opinion pieces), to entertain (e.g., a viral video, or to sell a product or service (e.g., advertising or marketing materials on a company website).

-Who is the intended audience?

- For example: Scholars and academic researchers with specialized knowledge, the general public (without specialized knowledge), students in high school, college or university (e.g., textbooks for students learning a new subject).

-Authority and credibility

- Who is the author?
- Is it a person?
- Is it an organization such as a government agency, non-profit organization, or a corporation?
- What are the qualifications of the author?
- What is the author's occupation, experience, or educational background?
- Does the author have any subject matter expertise?
- Is the author affiliated with an organization such as a university, government agency, non-profit organization, or a corporation?
- Who is the publisher?
- For books, is it a university press or a commercial publisher? These types of publishers use editors in order to ensure a quality publication.
- For journals or magazines, can you tell if it is popular or scholarly in nature? See: Peer-reviewed, popular magazine, or journal?
- For websites, is it an organizational website, or a personal blog?

-Accuracy and reliability

- Is the information well researched?
- Are there references (e.g., citations, footnotes, or a bibliography) to sources that will provide evidence for the claims made?
- If the source includes facts or statistical data, can this information be verified in another source?
- If the data was gathered using original research (such as polling or surveys), what was the method of data collection? Has the author disclosed the validity or reliability of the data?

-Currency and timeliness

- When was the information published?
- For books and articles - you should be able to easily verify the publication date.
- For websites, try to determine the date the web page was created or updated
- Is current information required? If not, then accurate, yet historical information may still be acceptable.

-Objectivity or bias

- Does the source contain opinions or facts?
- Is the information presented in the source objective (unbiased) or subjective (biased)?
- Does the information promote a political, religious, or social agenda?
- Is advertising content (usually found in business magazines or newspapers) clearly labelled?

-In Summary

- Does the source provide you with high-quality information? Is the information useful in answering your questions and meeting your information need?

References

- Shona Mc Combes, (2019), How to Write a Research Methodology, https://www.scribbr.com/dissertation/methodology/
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- https://politics.ucsc.edu/undergraduate/chicago Chicago Citation Style: Footnotes and Bibliography (2010).

- https://researchguides.library.brocku.ca/external-analysis/evaluating-sources

Think about it-

- Why is writing the research report considered as the most crucial step in a research process?
- Discuss the importance of an outline in research.
- How does building a support for each main idea help write a good outline?
- What should the researcher focus on while writing?
- How important are references in research?