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Introduction

Thanks to intensive scientific research, many universities have distinguished themselves from one another. For example, Harvard University in the United States is considered among the elite global universities and ranks first in the international university rankings. This distinction is largely attributed to the high-quality research conducted by its scholars, setting it apart from other institutions worldwide.

Moreover, through scientific research, numerous universities have been able to provide optimal solutions to a variety of societal challenges, including economic and health-related issues, among others. This is why most nations place significant emphasis on scientific research, investing substantial financial resources to enhance its quality. This growing attention is a direct result of the fruitful outcomes achieved through research, which have provided tangible benefits for societies.

The fruitful results obtained through scientific research are fundamentally the product of adhering to sound scientific methodologies in conducting studies. Without following proper research steps, scholars would be unable to arrive at useful and practical results; in fact, poorly executed research could lead to catastrophic outcomes if its findings are implemented. Therefore, researchers must adhere to the established rules of scientific research to ensure that their findings bring about tangible benefits.

To clarify the various principles of scientific research for students, this booklet has been designed as a guide and reference for second-year Master's students in Algerian universities, particularly those in faculties of economics. Its purpose is to introduce the scientific foundations that should be followed and considered when conducting research in the field of economic sciences.

We hope, with the grace of God, that this booklet serves its intended purpose and acts as a valuable addition to the college library.

Chapter One: Fundamental Concepts of Scientific Research

This Chapter is dedicated to presenting the various concepts and definitions associated with scientific research. It also highlights the characteristics that distinguish scientific research from other types of studies and includes an overview of the different types of scientific research.

1. Definition of Scientific Research and Its Objectives

1.1 Definition of Scientific Research

Numerous definitions of scientific research are found in the literature, often categorized based on the goals of the research. These categories are as follows:

1.1.1. Definitions Focused on Discovering Facts, Phenomena, and Relationships

Some examples include (Al-Dabbagh, 2013, pp. 19–21) :

- Scientific research is defined as "a method for clarifying facts that are not yet fully or accurately understood."
- It is "a set of general rules used to uncover truth in science through a series of mental processes governed by specific principles until a result is reached."
- It is also described as "the discovery of new facts or the verification of existing ones."
- Another definition states that scientific research is "a systematic method or organized inquiry to uncover new facts, verify existing ones, identify relationships, or establish governing laws, thereby contributing to the growth of human knowledge."
- It is also defined as "a scientific, sequential analysis of phenomena and their interrelations, based on appropriate theoretical or reference frameworks."

Chapter One: Fundamental Concepts of Scientific Research

- Scientific research is "a systematic scientific activity aimed at discovering truths using objective and validated methods, establishing relationships among facts, and deriving general principles or explanatory laws."
- It is "a rigorous inquiry aimed at discovering general facts and principles that can be tested and validated in the future."
- Another definition is "a systematic and precise inquiry to uncover information, facts, and relationships, as well as to develop, modify, and analyze existing information."
- It is described as "the observation of tangible facts in an organized manner, hypothesizing, collecting data, and verifying hypotheses to derive laws and theories that explain and predict phenomena under specific conditions."
- It is "a method of discovering the truth, primarily relying on analytical and critical thinking, formulating problems, hypotheses, and solutions, collecting and organizing information, and drawing conclusions to test their alignment with initial hypotheses."
- Scientific research is also defined as "a systematic inquiry into the future by discovering, verifying, or establishing new facts and relationships."
- Another description is "a structured method for explaining multiple phenomena, whether they are economic, administrative, or social."
- It is defined as "a serious academic inquiry or investigation aimed at discovering or interpreting new facts or reviewing widely accepted theories and laws in light of new evidence or practical applications."
- It is "an objective, scientific, organized, and precise approach to uncovering information, facts, and dialectical relationships."

- Another definition states that scientific research is "a scientific method used by researchers to analyze and understand relationships among various phenomena, whether social, economic, or physical."

- Finally, it is defined as "a pathway to uncovering truth in sciences through general rules that guide mental processes toward a known outcome."

1.1.2. Definitions Focused on Solving Problems

Examples include (Al-Dabbagh, 2013, pp. 21–22):

- Scientific research is "a means to solve various problems by conducting a thorough and accurate investigation of all phenomena, variables, and evidence related to the research problem."

- It is defined as "a mental activity that addresses a specific problem, helping individuals navigate challenges in life."

- It is also described as "a means to achieve a specific goal, such as solving a particular problem."

- Another definition states that it is "an objective study conducted by researchers in natural or human sciences to address issues related to the material or cultural aspects of society."

- It is "a method of study through which solutions to specific problems can be achieved by thoroughly investigating all relevant evidence."

- Another description defines it as "a method by which individuals solve difficult problems, thereby surpassing the limits of human ignorance."

- It is also "a scientific method for solving various problems emerging across different disciplines."

- Lastly, it is "a meticulous and organized effort to find solutions to the diverse challenges that confront humanity, causing concern and confusion."

1.1.3. Definitions Focused on Knowledge Generation

Examples include (Al-Dabbagh, 2013, p. 22):

- Scientific research is "an activity undertaken by individuals in a systematic manner to generate outcomes logically, thereby increasing knowledge."
- It is "a structured investigation aimed at adding knowledge that can be communicated and verified through scientific testing."
- Another definition states that it is "a pursuit of answers to specific questions with the aim of increasing understanding."

1.2. Objective Analysis of Scientific Research Definitions

The definitions of scientific research are built upon a set of interconnected and integrated foundations, such that when properly compiled, they provide an accurate definition of scientific research. These foundations can be summarized as follows (Al-Dabbagh, 2013, pp. 22–24):

1.2.1. The Nature of Scientific Research:

Upon reviewing the previous definitions, it becomes evident that the essence of scientific research has been obscured by a large number of diverse, scattered terms found within these definitions. These definitions refer to various terms such as (inquiry, method, approach, means, study, technique, endeavor, activity, exploration, observation). While each of these terms is expressive and correct, the term that most accurately and clearly represents the essence of scientific research is "human intellectual effort." In reality, the essence of scientific research lies in the intellectual efforts of a learned individual who has reached an advanced level of scientific and intellectual achievement.

1.2.2. The Objective of Scientific Research

The second foundational principle in defining scientific research revolves around three primary objectives:

- Discovering facts, phenomena, and the relationships between them, as well as predicting future outcomes.
- Addressing problems that hinder human progress.
- Contributing new scientific knowledge to humanity, complementing the accumulated body of knowledge.

1.2.3. The Nature of Work in Scientific Research

The definitions portray scientific research as: **organized, precise, scientific, objective, serious, critical, and logical.** These attributes underscore the high level of precision and objectivity inherent in scientific research, surpassing any other form of endeavor. The meticulousness and seriousness required in scientific research exceed that of most other human activities.

1.2.4. The Nature of the Scientific Research Methodology

The definitions describe the methodology of scientific research using terms such as **realistic, causal, evidence-based, analytical, verifiable, hypothetical, investigative, exploratory, experimental, material, non-material, evidentiary, logical, and systematic.** These terms highlight the reliance of scientific research on credible and scientific means, avoiding superstitious or unscientific approaches. A scientific researcher employs persuasive scientific tools that can be validated and relied upon.

1.2.5. The Comprehensive Nature of Scientific Research

The previous definitions also highlight terms that reflect comprehensiveness, such as **human knowledge, universality, multiple phenomena, numerous variables, diverse problems, material aspects, cultural dimensions, and boundaries of human ignorance.** These terms emphasize that no single field or discipline monopolizes scientific research. Instead, scientific research encompasses all areas of life and all disciplines, whether pure sciences like

medicine, chemistry, physics, engineering, or mathematics, or social and human sciences like economics, management, sociology, or psychology.

1.3. Objectives of Scientific Research

Every research has a specific goal or set of goals, but scientific research in general, regardless of its types, methods, and disciplines, shares common objectives. These include (Al-Qadhi & Al-Bayati, 2008, pp. 94–96):

1.3.1. Describing Phenomena

This objective involves providing a clear, descriptive, and complete picture of a specific phenomenon, a group of phenomena, or the variables involved in a given study or research. The descriptive picture includes data collection, classification, organization, preparation, and presentation. Graphical representations can be used to present these descriptions, as well as statistical concepts such as measures of central tendency, measures of dispersion, and other concepts related to descriptive statistics.

1.3.2. Explaining Phenomena

This involves uncovering the causes that led to the occurrence of a specific phenomenon or group of phenomena or variables. Various statistical methods and techniques are suitable for such analysis and can be applied to different cases within multiple fields of applied research. Explaining phenomena also includes making comparisons and linking phenomena together. For example, this objective could involve studying factors that affect the academic performance of university students, analyzing factors contributing to high accident and crime rates in a specific area, or examining the relationship between income and spending patterns within a group of households.

1.3.3. Predicting Phenomena

After describing and explaining phenomena, the next objective is prediction. This involves making future estimates or projections for events that are expected

to occur in the near or distant future, assuming that the surrounding conditions and factors remain unchanged. For instance, prediction could involve forecasting temperature trends for upcoming periods or creating future production plans to estimate the output of specific products or goods in one or more factories. Prediction is particularly relevant in applied sciences.

1.3.4. Controlling Phenomena

This objective involves controlling or managing the factors that influence or govern a particular phenomenon or group of phenomena, which lead to their occurrence. While controlling natural phenomena can often be achieved, controlling social and human phenomena is relatively more difficult due to the complexity of these phenomena, which involve numerous changing variables.

2. Characteristics, Importance, and Types of Scientific Research

2.1. Characteristics of Scientific Research:

Scientific research shares a set of characteristics that distinguish it from other types of research. These characteristics are as follows (Abu Zainah et al., 2007, pp. 20–22):

2.1.1. Objectivity:

The term objectivity in research refers to the procedures used in data collection and analysis, through which meaning or a specific outcome can be achieved. While objectivity in quantitative research means the researcher’s non-interference in the collection or interpretation of data, it signifies clarity and transparency in qualitative research. In other words, objectivity refers to the nature of the data obtained through the study's procedures, rather than the personal attributes of the researcher.

2.1.2. Accuracy:

Research employs technical language to convey precise meanings to the reader. The concepts or meanings of terms such as creative thinking, inquiry,

unemployment, inflation, and artificial intelligence carry specific and precise connotations in research, which may differ from their traditional or commonly used meanings. Accuracy is expressed through detailed descriptions, particularly in qualitative research, as precise and controlled language presents the study in a clear manner, allowing the study to be replicated, extended, and its results used correctly. In quantitative research, accuracy is expressed through the use of numbers and statistical data, where it also refers to the precision of measurements obtained from tests, surveys, or observational tools used for data collection, leading to accurate and reliable data.

2.1.3. Verification:

The results of a study can be verified either through using different designs or tools with the same characteristics as those used in the study or by repeating the study itself on similar groups or samples. It is important to note that qualitative studies may not be subject to the same level of verification as quantitative studies, as they provide descriptive concepts about unique situations or contexts that may not have comparable instances.

2.1.4. Experimentation:

For the general public, experimentation refers to relying on practical experience. For researchers, however, the term refers to drawing conclusions based on evidence obtained through research methods and practical application, not based on opinions or references.

2.1.5. Logical Thinking:

All forms of research require some form of logical thinking. Logical thinking is based on the rules and judgments of logic and is of two types: the first is inductive reasoning, which moves from specific cases or statements to generalizations or universal judgments, and the second is deductive reasoning, which moves from a statement or generalization to a specific conclusion, i.e., deriving partial knowledge from overall general knowledge. If the premises in

deductive reasoning are correct, the conclusions are automatically correct. In inductive logic, the researcher reaches a conclusion by observing specific cases and then generalizing the findings from these cases to cover the entire set of similar cases.

Logical thinking, whether inductive or deductive, defines research approaches. For example, conclusions drawn from a theory determine hypotheses that are tested based on the data collected. Quantitative experimental research uses this mode of thinking.

2.1.6. Probabilistic Inference:

What research in natural or behavioral sciences offers are probabilistic conclusions, not absolute or certain ones. Research cannot assert that something is definitively certain, but it can state that the likelihood of something being false, for example, is 0.05 or 0.01.

Probabilistic thinking plays a central role in research, with all research in the natural sciences being probabilistic. In the social and human sciences, however, there is a greater degree of uncertainty compared to the natural sciences.

2.2. The Importance of Scientific Research:

There are various methods and approaches through which the importance of research is formulated, all of which revolve around two main axes (Al-Sirfi, 2008, p. 76):

2.2.1. The First Axis: The Importance of Research from a Scientific (Academic) Perspective:

This refers to what the research will contribute to the scientific field. Here, the goal is not necessarily to add new scientific theories, but rather to reframe well-known scientific principles within new frameworks.

2.2.2. The Second Axis: The Importance of Research from a Practical (Applied) Perspective:

In this regard, the researcher must answer the following question: Will the problem you are solving benefit the organization you work for or the community you live in?

For the researcher to formulate the importance of their study, they must present the research problem they aim to address and then carefully reflect on the following questions (Al-Sirfi, 2008, pp. 76–77):

- What are the scientific relationships and models they can add to the library by solving this problem?
- What are the benefits that they, their organization, and the community will gain by solving this problem?
- The researcher's ability to formulate the importance of the research largely depends on how deeply they feel connected to the research problem. There is no definitive way to phrase the importance of research; it depends on the researcher's ability to express themselves and their understanding of the problem.

Below are some examples of how researchers have formulated the importance of their studies (Al-Sirfi, 2008, pp. 77–80):

2.2.3. First Study:

The study is titled *"The Evaluation of Sana'a University Students on Their Learning Strategies for University Courses."* The researcher defined the problem as follows:

What is the evaluation of Sana'a University students regarding their learning strategies for a number of courses in history and English language principles?

The researcher formulated the importance of the study as follows:

- **Scientifically:** The researcher presents a classified list of criteria for university learning strategies used in evaluating course learning.
- **Practically:** This research contributes to diagnosing the strengths and weaknesses of university learning strategies in the Yemeni Arab Republic.

2.2.4. Second Study:

The study is titled *"The Importance of Factors Affecting the Leadership Maturity Level in Management in Saudi Industrial Companies (A Field Study)."* The researcher defined the problem as follows:

What is the stability and flexibility of the leadership style used, and its potential for development by managers during administrative guidance operations?

The researcher formulated the importance of the study as follows:

- **Scientifically:** This study offers a new methodological addition that links different leadership styles through a more developed proposed model.
- **Practically:** This study provides the following contributions:
  - Identifying the prevalent leadership styles among Saudi managers.
  - Identifying the main decision-making methods used by Saudi leaders.
  - Identifying the relationship between prevailing leadership styles and the developed model.
  - Identifying the leadership maturity level within Saudi management.
  - Identifying factors affecting the development of relations between leaders and subordinates.

– Identifying modern management trends in Saudi Arabia towards more developed leadership styles.

2.2.5. Third Study:

The study is titled *"Management Knowledge of Leaders in Business Organizations and Governmental Organizations in the United Arab Emirates (A Field Study)."* The researcher defined the problem in two sections:

- What are the levels of management knowledge among leaders in planning, organizing, directing, controlling, and decision-making?
- Does management knowledge differ among leaders based on organizational ownership, activity type, job level, educational level, field of study, age, previous experience, supervision scope, number of training courses in the workplace, or years of experience using computers in the workplace?

The researcher formulated the importance of the study as follows:

- **Scientifically:** The research will enrich the Arabic management library, as it was found to be lacking in this type of research, a gap identified by the researcher after reviewing specialized Arabic journals in management sciences. This research will address this topic, thus filling part of the scientific gap in this field.
- **Practically:** Recognizing the management knowledge of leaders will lead to:

– Identifying strengths and weaknesses in this area, and then proposing recommendations to address weaknesses while enhancing strengths.

– Recognizing factors that have a significant impact on management knowledge, leading to more informed leadership selection and more effective leadership development planning.

– Raising awareness among leadership about the importance of management knowledge in successfully fulfilling their duties.

Chapter One: Fundamental Concepts of Scientific Research

There is no debate regarding the importance of scientific research, and everyone agrees on this fact. However, it is our responsibility to convince the reader of this truth by showcasing the benefits and accomplishments achieved by humanity through scientific research, which can be summarized as follows (Al-Dabbagh, 2013, pp. 26–28):

- Getting rid of superstitious and metaphysical explanations for phenomena and relationships. In the Middle Ages, when the church controlled Europe, no one dared to say that the earth was round, as this idea contradicted religious views at the time. Even today, some still resort to superstitions for healing when sick. However, scientific research has put an end to these superstitions, relying on the scientific method to explain phenomena and solve problems.

- Gaining deep scientific knowledge of phenomena, not just superficial understanding, with the ability to track, verify, and predict them. For example, solar and lunar eclipses, which humans were able to explain scientifically and logically through observation and repetition, eventually reaching the ability to predict them long before they occur.

- Discoveries and the development of scientific theories and laws that explain the nature of phenomena and their impact on humans. Examples include Pascal's law, which contributed to the development of boat and ship design, or the law of demand, which states that there is an inverse relationship between price and quantity demanded.

- The establishment of numerous laws and regulations that govern human and social affairs, such as criminal laws to address crimes and personal status laws that regulate marital relations, rights, and inheritance.

- The development of accurate measurement tools to control and predict phenomena. For instance, the Richter scale was developed to measure the intensity of earthquakes, and thermometers measure temperature. Moreover, it

can be predicted that if a certain temperature threshold is reached in a machine, it will explode.

- Conducting objective, analytical studies of the present, with the ability to predict the future. Scientific research also connects the past, present, and future. For example, the decline in profit in pottery manufacturing and the abundance of substitutes may lead to its disappearance in the future.

- Reflecting societal philosophies through research methods and tools. For instance, the freedom of prices and trade reflects a capitalist philosophy, while centralized comprehensive policies reflect Shiite ideology.

- Scientific research helps clarify the relationships between factors and variables related to national development plans. For example, the availability of labor at reasonable wages positively affects development, while a shortage of capital and lack of funding negatively affects it. Such issues can be addressed through scientific research.

In reality, no one can deny the effective role of scientific research in various fields of life, as it is the foundation of societal progress and economic well-being. Scientific research is no longer confined to pure sciences alone but has expanded to focus on social and economic phenomena. The door to further research remains open as long as there is access to information, data, and resources to achieve more discoveries and benefits (Al-Dabbagh, 2013, p. 28).

Developed countries have long recognized the importance of scientific research, establishing specialized research centers and building independent institutions for scientific research. All these institutions aim to conduct rigorous research to address complex problems and find appropriate solutions. If the performance of these scientific centers declines, it will negatively impact the development of these countries (Al-Dabbagh, 2013, p. 28).

After World War II, developing countries realized the urgent need to establish research centers and conduct further studies to keep up with technological developments in developed countries. However, this topic has not received adequate attention, and research funding remains low compared to developed nations. There remains a significant gap between developed and developing countries in terms of research and development. Therefore, developing countries must provide all necessary resources for scientific research, including data, information, laboratory materials, financial support, and specialists, while ensuring an appropriate environment for researchers to complete their work (Al-Dabbagh, 2013, pp. 28–29).

There is no doubt that the primary responsibility for providing research resources and overseeing this effort lies with universities, particularly in graduate studies. Universities are responsible for preparing researchers and ensuring they fully understand the goals and responsibilities of scientific research. Thus, research methodology courses are an essential part of academic programs as they help students develop their research skills, understand completed studies analytically and critically, and prepare research that makes a meaningful contribution to the field (Al-Dabbagh, 2013, p. 29).

2.3. Types of Scientific Research:

The classifications of scientific research types vary into several categories as follows:

2.3.1. Classification of Types of Scientific Research Based on Purpose:

- **Basic (Theoretical) Research**: This research refers to scientific activities aimed primarily and directly at uncovering scientific facts, laws, and verified theories. It contributes to the growth of scientific knowledge and enhances its understanding, regardless of its direct applications in real-world scenarios.

- **Applied Research**: This research derives conclusions related to a specific phenomenon that can be applied to solve a problem associated with that phenomenon. This type of research is used across a wide range of fields, including economics, humanities, and others.

2.3.2. Classification of Types of Scientific Research Based on Methodology:

- **Research Using the Deductive Method**: This type of research is associated with social sciences and requires describing events or phenomena, followed by gathering facts and preparing reports or conclusions to clarify the picture. Based on this, suitable decisions are made.

- **Research Using the Historical Method**: This research aims to study specific historical events related to the problem under investigation, recording, analyzing, and interpreting them. It is used to generalize on the present and make predictions about the future.

- **Research Using the Experimental Method**: This type of research is based on experimentation, observation, hypothesis formation, and testing the validity of the hypotheses.

- **Research Using the Inductive Method**: This type focuses on a detailed analysis of the problem and its dimensions, commonly used in studies related to mathematical, physical, or statistical sciences. It relies on inference to derive conclusions that explain the phenomenon well.

2.3.3. Classification of Types of Scientific Research Based on the Nature of the Subject Matter:

- **Pure Scientific Research**: This type focuses on studying fields such as chemistry, physics, mathematics, and astronomy.

- **Social Research**: This research deals with studying social sciences such as sociology, psychology, and philosophy.

- **Economic Research**: It focuses on economic and administrative development and all branches related to finance and business.

- **Geographical Research**: This research examines the nature of climatic conditions, terrain, seas, and oceans.

- **Religious Research**: It deals with the study of religions and the associated rules and regulations.

- **Historical Research**: This type of research examines the history of human beings in a specific era, exploring the nature of that period and the events characterizing it.

- **Documentary Research**: This research studies documents and manuscripts, extracting information to identify specific individuals or periods.

2.3.4. Classification of Types of Scientific Research Based on Educational Level:

Research can be classified into three types based on the educational level (Abu Al-Rus, 2001, pp. 7–8):

- **Classroom Research**: This type of research is assigned to students during the final years of their university education, specifically in the undergraduate and master's stages. These are usually limited studies, with the supervisor providing guidance on topic selection, reference materials, and research-writing techniques. These studies are considered introductory, aimed at developing the student's ability to conduct research, use libraries, review books and references, and choose the most relevant materials for their research field. This experience prepares students for larger, more specialized research in graduate studies.

- **Master's Research**: This refers to the master's thesis that a student must complete to earn a master's degree in their chosen field. These research projects are more in-depth and substantial compared to classroom research. The student is primarily responsible for the research, even though a supervisor is assigned. This

helps the student deepen their research skills and independence in discovering facts, which prepares them for larger and more complex research at the doctoral level. Typically, master's research takes two to four years.

- **Doctoral Research**: While doctoral research is structurally similar to master's research, its content should demonstrate the student's maturity in thinking and methodological expertise gained through their specialization. It prepares the student to address scientific issues in their field of study. A doctoral dissertation positions the researcher as a lifelong scholar in their field, contributing to the scientific community. Doctoral research marks not the end but the beginning of further fruitful, impactful research that aims to serve society and the nation.

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Chapter Two: Scientific Knowledge, Science, the Scientific Method, and Sources of Scientific Research

Chapter Two: Scientific Knowledge, Science, the Scientific Method, and Sources of Scientific Research

This Chapter will explore the various concepts related to scientific knowledge and science, as well as how knowledge has been acquired historically and in the modern era. It will also discuss the research methods used in economic sciences and the data sources needed for scientific research.

1. Scientific Knowledge and Science

1.1. Scientific Knowledge and How to Obtain It:

1.1.1. Concept of Scientific Knowledge

Knowledge is the name of the action derived from the verb "to know," and it is the opposite of ignorance. The term "knowledge" refers to everything a person perceives, such as feelings, facts, illusions, or ideas, which contribute to their understanding of the environment and how to interact with it. One characteristic of knowledge is that its possessor does not lose it, and frequent use increases and sometimes refines it (Sini, 1994, p. 13).

Knowledge is part of human development; without it, a person loses a significant part of their humanity. It provides necessary religious teachings for achieving happiness in both this life and the hereafter. It aids in understanding the environment and in predicting potential dangers, allowing the individual to avoid them, while also identifying the natural laws that govern the universe, so they can be utilized for personal benefit. Knowledge entertains, fills voids, and satisfies curiosity. Some knowledge is innate, often referred to as instinctual or intrinsic knowledge. Some comes from the teachings of prophets and messengers of God (peace be upon them). While divine in origin, this knowledge is acquired by humans. Other knowledge comes from personal perception and reflection, or from the experiences and reflections of others. All these types of knowledge are acquired (Sini, 1994, p. 13).

1.1.2. Methods of Acquiring Knowledge

Throughout history, humans have continuously sought knowledge to answer questions about the world around them and to improve their way of life. They have turned to multiple sources of knowledge when seeking solutions to problems or explanations for phenomena, including authority, personal experience, deductive and inductive reasoning, and the scientific method.

The methods humans have used to acquire knowledge can be summarized as follows (Sini, 1994, pp. 13–18):

1.1.2.1. Ancient Methods of Acquiring Knowledge:

From the beginning of human life on Earth, people sought explanations for the phenomena they observed, but their experience was limited and their thinking restricted to explaining unusual occurrences or finding answers to questions and solving problems. Various methods were employed, such as:

- **Serendipity**: Often, humans arrived at knowledge by chance. For instance, a person might notice that rubbing their hands together in the winter generates warmth, leading to the understanding that friction creates heat, which could then be used to start a fire. Although this method can lead to discovery, it often results in errors.

- **Trial and Error**: Humans would try a specific method to achieve a goal, and if unsuccessful, they would try another approach until they reached their objective. This method was commonly used in herbal medicine, where individuals would experiment with different plants or herbs to treat illnesses, continuing until they found a successful remedy.

- **Authority**: People would often turn to authority for knowledge, believing that tribal leaders or elders were sources of wisdom. This method is time-efficient but can sometimes lead to errors.

- **Personal Experience**: Frequently, individuals would try to recall or search for personal experiences to help solve problems. An ancient person might recall that certain crops ripen at specific times of the year or remember where seeds grew best in the previous year.

- **Using Personal Experience**: Drawing from prior knowledge is common in research and acquiring new knowledge. For example, someone might use their knowledge of calculating the area of a rectangle to find the area of a parallelogram by transforming it into a rectangle.

- **Logic (Deductive Thinking)**: This approach involves reasoning from premises to conclusions. If the premises are accepted as true, the conclusion must also be accepted. Deduction involves reasoning from general premises to a specific conclusion. A common example might be:

– If a fire breaks out in a school, children are in danger.
– A fire has broken out in the school.
– Therefore, children are in danger.

These hypothetical or conditional statements represent a phase of uncertain thinking and knowledge. A critique of deductive reasoning is that it exposes individuals to errors, as one of the premises could be false, making the conclusion invalid.

Since humans believe that what is true for a whole is also true for its parts, they have relied on two types of deductive thinking—**deduction** and **induction**—to test the truth of certain conclusions or facts. Deductive thinking remained a prominent method of acquiring knowledge for centuries and is still useful today, as it helps organize premises into patterns that provide conclusive evidence for a given result.

However, despite being useful, deductive reasoning cannot be relied upon solely for acquiring true knowledge. Since conclusions derived through deduction are valid only if the premises are true, induction is also employed, where the researcher gathers evidence to support generalizations, moving from specifics to generalities. Induction, when based on sufficient and representative examples, is a reliable method for acquiring certainty.

1.1.2.1.Modern Methods of Acquiring Knowledge:

In the 17th century, humans innovated a new method for acquiring knowledge, which laid the foundation for modern scientific inquiry. Francis Bacon planted the seeds of the scientific method when he criticized deductive reasoning based on accepted premises and proposed reaching general conclusions based on observable facts. Later, Newton and Galileo sought to develop a more effective method for acquiring reliable knowledge by combining deductive and inductive reasoning, leading to the creation of the scientific research method. John Dewey, in his 1910 book "How We Think," outlined a systematic series of steps in the scientific method:

- Feeling the problem, which places the researcher in a state of confusion, anxiety, and discomfort.
- Defining the problem and gathering relevant data.
- Formulating hypotheses or provisional solutions to the problem.
- Testing the hypotheses.
- Reaching conclusions.

As sciences and knowledge have evolved, researchers have developed scientific methodologies that lead to new insights. It is important to note that the scientific method does not always lead to absolute truths or certainties but to

relative facts that can be refined with new observations and applications. The scientific method in the search for truth is a slow process, but the solutions it provides to problems can be trusted more than speculative guesses that hinder further inquiry. The scientific method encourages skepticism about unsupported conclusions and acts as a powerful and practical tool for discovering new realms of truth. It remains one of the most effective ways humans expand their knowledge and enrich their information.

1.2. The Nature, Characteristics, and Objectives of Science:

1.2.1. The Nature of Science:

From a linguistic perspective, science refers to knowledge, understanding, and awareness of facts; it is the comprehension and grasp of truths and all that is related to them. Science is the foundation of knowledge, though it is broader in scope and depth. Thus, science is often described as a collection of issues, matters, and facts, and as a human endeavor—a cumulative, evolving process that does not occur randomly or by chance.

To define the concept of science, it is essential to understand its characteristics, which can be outlined as follows (Diab, 2003, pp. 9–11):

- **Science is an organized purposeful activity:** This means that science is a goal-oriented activity undertaken by humans to achieve specific objectives. It does not happen by chance or randomly but requires a series of systematic, coordinated steps to reach facts and information.

- Science seeks to observe phenomena, events, and their causes and components in order to predict what will happen and then control and benefit from these phenomena.

- **Science has expanding boundaries:** Although science is limited by time and space, what was known at one time is less than what is known today, and what is

known today is less than what humanity will know tomorrow. Science expands over time through the development of communication and connection tools. This expansion, in both time and space, depends on human efforts and scientific activities.

- **Science covers a broad range of fields:** Science is not confined to a single domain but spans natural sciences, humanities, theoretical sciences, and applied sciences. Therefore, science is broader than education, despite the latter's wide scope and variety, as education is a subfield of the humanities and social sciences. Thus, science is a broad concept that encompasses many branches and subfields—"And you have been given but little knowledge."

- **Precision and Objectivity:** Science is characterized by precision and objectivity. It relies on investigation and scrutiny, leaving no part of the phenomenon under study unchecked. No information or facts are concealed, even if they do not align with other facts. This reliance is based on observation, recording, experimentation, repetition, and measurement. Precision is a guarantee for the researcher to achieve and verify results, and objectivity is a source of confidence for the scientist in themselves and in the others who contributed to uncovering these facts.

- **Science is a human endeavor and a cumulative process:** Every civilization has contributed to the building and expanding of science, and it is not confined to any specific nation or community. People exchange knowledge and achievements across civilizations and ages, benefiting from each other's experiences while adding to them. This implies to researchers that they do not start from scratch, as previous efforts have led to many studies and research. It is essential to review these studies and the efforts made to enable comparisons, generate new knowledge, and interpret results in light of each other while discovering the differences between them.

- **Science has content and method:** Science involves selected and accumulated material, comprising a collection of facts, concepts, principles, and laws. It is not limited to that but also includes research and thinking methods. Therefore, there are many research and thinking methodologies from which the researcher can choose those most suited to their research topic and study.

- **Science has tools and techniques:** Science does not rely merely on casual observation or qualitative description but focuses on measurement and obtaining quantitative data through the use of various tools and techniques. It depends on several methods to uncover its truths and phenomena, obtaining concepts, generalizations, and verifying information.

- **Science involves both cognitive and sensory aspects:** Science is a series of mental concepts based on observation and experimentation. Scientific facts, concepts, and generalizations are perceived through the senses and the mind. Sensory data alone cannot infer what is beyond the observable; it is the mind that enables this understanding.

1.2.2. The Objectives of Science:

The objectives of science do not differ from those of human beings. Since ancient times, humanity's desire to understand the world around them led to primitive explanations of phenomena. Early humans sought the help of wise men, soothsayers, and astrologers to predict the future. Their greatest desires were to find knowledge that could help them control floods, famines, diseases, and other forces threatening their lives. Modern scientists, too, aim to understand the phenomena they observe, discover the system of the universe, comprehend natural laws, and learn how to control its forces (Attari, 2009, p. 16).

Below are the objectives of science (Diab, 2003, pp. 12–13):

- **Understanding:** Understanding is the primary goal of science. Science is a human activity aimed at understanding and explaining different phenomena. Understanding differs from mere description in that it involves grasping the causes and factors that led to the phenomenon, rather than merely listing its properties and characteristics. It also entails understanding the relationships between the phenomenon under study and other phenomena that led to its occurrence, along with the circumstances and factors that contribute to its emergence. Therefore, understanding means describing and explaining a phenomenon.
- **Prediction:** Understanding a phenomenon and recognizing the relationships and laws governing it increases one's ability to predict and infer. Prediction involves forecasting potential outcomes based on discovered laws, applied to new situations, relying on previous information and knowledge of a specific phenomenon.
- **Control and Regulation:** Science aims to control and regulate various phenomena. After understanding a phenomenon and the factors that affect it, science can control these factors or increase or decrease their effects according to the desired outcome.

This objective is closely related to the previous two: understanding and prediction. If a person understands a phenomenon, they can predict its relationships and control it. Regulation is a form of applying knowledge to serve humanity or guide its behavior.

- **Enhancing Mental Activity:** Through science and the organized methods employed by scientists to develop human knowledge, the capacity for thinking and research increases, enhancing cognitive skills such as observation, interpretation, analysis, synthesis, and decision-making.

- **Discovering Practical Applications of Theories:** One of the goals of science is to identify the practical applications of theoretical knowledge, leading to the discovery of products and devices that serve human development. The aim of science is not limited to achieving technological and scientific progress but also extends to understanding the practical uses of these products from a functional perspective.

2. Research Methods and Sources

2.1. Scientific Research Methods

2.1.1. Definition of the Scientific Method:

There have been several definitions of the scientific method in research literature, including (Al-Dabbagh, 2013, p. 75):

- A path to knowledge.
- A way of acting toward solving a problem or facing a particular situation.
- The path leading to scientific facts based on rules that guide the mind.
- The way that leads to uncovering the truth in sciences through a set of general rules that govern the process of reasoning, guiding it to a known result.
- A set of rational rules based on a specific scientific philosophy used as a basis for discovering the truth.

All of the above definitions are correct and share the same meaning, despite differing expressions. Based on these definitions, the scientific method can be defined as the appropriate and used scientific means to uncover the truth and reach a conclusion (Al-Dabbagh, 2013, p. 76).

Scientific methods are diverse and vary from one field to another. Researchers must select and define the scientific method that aligns with their research.

One can liken the scientific method to a hunting tool: fish are caught with nets, deer with rifles, and bears with traps, etc. Just as different tools are used for different animals, the researcher's choice of method must suit their research, ensuring ease and success in conducting the study. Conversely, an inappropriate choice of method makes the task difficult (Al-Dabbagh, 2013, p. 76).

2.1.2. Scientific Methods Used in Economic Sciences:

In economic sciences, researchers tackle research problems by applying two primary methods: the deductive method and the inductive method. Below is an explanation of these two methods:

- **The Deductive Method:** The deductive method involves reasoning from general principles to specific instances. It contrasts with the inductive method, which moves from specific observations to broader generalizations. The deductive method begins with general rules and deduces specific facts that apply to the part of the study the researcher is investigating (BTS Academy, 2023).

It connects the premises to the conclusions, linking causes and effects based on logic and mental reflection. It starts from generalizations to arrive at specific details (Aishour et al., 2017, p. 213). This method is a form of logic, starting with a general statement or hypothesis and studying the possibility of reaching a particular conclusion. For example, "Mohammed is a first-year student; all first-year students are diligent; therefore, Mohammed is diligent (BTS Academy, 2023)."

- **The Inductive Method:** The inductive method involves reasoning from specific observations to broader generalizations. It includes scientific inferences based on observations or experiments. Induction refers to the mental processes through which conclusions are reached from observed details or specifics (Obeidat et al., 1999, p. 48).

The method starts with particular instances and moves toward generalizations, using observation, experimentation, and control of variables to reach conclusions that are formulated as general laws governing a phenomenon (Aishour et al., 2017, p. 213).

It is important to note the clear distinction between induction and deduction. For example, deduction involves all mental operations within the mind, starting with a general idea that is considered self-evident or axiomatic. As such, the researcher tries to prove that what applies to the whole also applies to its parts, assuming that the part belongs to the whole (Obeidat et al., 1999, p. 48).

On the other hand, induction involves the researcher observing details or specifics of the phenomenon under study, analyzing them to derive general laws or theoretical frameworks by generalizing the results from tested instances to all components or instances of the phenomenon not yet studied (Obeidat et al., 1999, p. 48).

Furthermore, the distinction between deduction and induction is that deduction exists solely in the researcher's mind, while induction focuses on studying specific cases or instances, which complicates the process of generalizing the results across all components or facets of the broader phenomenon (Obeidat et al., 1999, p. 48).

In the field of economic sciences, researchers are often required to use either the deductive or inductive method depending on the type of research being conducted. In some studies, researchers may need to use both methods in tandem.

2.2. Sources of Scientific Research:

A researcher needs data regarding the problem they are addressing in order to analyze it and reach conclusions that will help solve the problem.

2.2.1. Definition of Data:

The singular of "data" is "datum," and it refers to raw material, such as personal identification data, readings from wired and wireless measurement devices emitted by transmitters and received by receivers, as well as perceptions sensed through our senses, such as gestures and body language, including head and eye movements and facial expression changes (Aliyan, 2014, p. 16).

Data are a collection of unconnected, objective facts about events. Thus, they describe part of what happened but do not provide judgments, interpretations, or rules for action. Therefore, data do not tell what should be done; they are raw, unprocessed observations and facts, presented in various forms, such as numbers, letters, words, symmetrical signals, or images, without context or organization (Aliyan, 2014, p. 16).

Data can take many forms, including words, numbers, tables, or shapes, and ultimately form facts and information about a particular subject.

2.2.2. Definition of Information:

The singular of "information" is "datum," which is the smallest unit of information and results from processing data through specific operations such as analysis and synthesis in order to extract indicators, relationships, comparisons, generalizations, balances, rates, and more through mathematical calculations, statistical and mathematical methods, logical processes, or simulation models. Therefore, information is processed data (Aliyan, 2014, p. 21).

Information is defined as organized facts and data that identify a specific situation, circumstance, threat, or opportunity. Thus, information is the outcome of data (Aliyan, 2014, p. 22).

Data is the raw material for information, and consequently, data is the essential material a researcher needs to prepare scientific research. A researcher

can obtain data from different sources, which vary depending on the type of data. A researcher can use two types of data, which serve as sources of scientific research:

- **Secondary Data:**

Secondary data refers to data that was collected for other purposes and is available from various pre-existing sources.

There are multiple sources of secondary data relevant to the research topic, and these sources can be divided into internal and external categories. Internal data sources include company records and reports, such as sales records, salespeople reports, financial data, accounting records, and intermediary reports. External data sources include government publications, publications from specialized magazines and newspapers, general newspapers, as well as scientific publications from universities and research centers, whether traditional or electronic, and company and university websites.

Before using secondary data, a researcher should verify its accuracy, timeliness, and the reliability of the source, along with the purpose of its collection and publication. If deemed unreliable, the researcher should move to primary data.

- **Primary Data:**

Primary data refers to new data collected specifically for a particular research study.

For example, researchers at a series of shopping malls found that 1600 shoppers entered the store and discovered that 80% of the crowd directed their purchases to a section representing only 20% of the store (grocery product sections). These data represent primary data because they were collected for the specific purpose of studying shopper behavior in stores.

A researcher should first look at secondary data to assess its suitability and adequacy for the research, as it saves a lot of effort and expense compared to collecting primary data, provided that the data is not outdated or inaccurate. If secondary data is found to be unsuitable or unreliable, the researcher turns to primary data that aligns with the research needs and guarantees accuracy and timeliness.

Chapter Two: Scientific Knowledge, Science, the Scientific Method, and Sources of Scientific Research

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Chapter Three: Steps in Preparing Scientific Research

The main steps in scientific research are summarized in six key stages: identifying the problem, reviewing previous studies, formulating hypotheses, determining the types and sources of data required for the research, reviewing and analyzing the data, and writing and presenting the study results. These steps will be discussed in this axis.

1. Step One - Identifying the Problem

1.1. Concept of the Research Problem:

The research problem refers to the topic of the research, which is broader than the title, although it is sometimes referred to by that term. If the topic represents a traffic sign, the title represents the arrow drawn on it, pointing more precisely to the path of traffic (Ghazi, 2007, p. 185).

To clarify this concept, let's say that the problem of acquiring a car is not limited to paying its price, even though this is the title or an indicator of purchasing it. Rather, the problem lies in everything related to the process of acquiring it: paying money, visiting dealerships, determining the time of the visit, examining the cars, inquiring about their prices, examining their types, colors, power, size, manufacturing year, testing, and other details that help and contribute to purchasing the car (Ghazi, 2007, p. 185).

Similarly, the research problem is not confined to its title alone. It expands to include its topics and everything related to it, such as ideas, details, titles, aspects, dimensions, and issues that can be shaped and clarified within the context of defining the problem (Ghazi, 2007, p. 185).

It is well-known that many research studies fail to deliver the expected benefits due to their inability to clearly define the research problem. This failure prevents identifying the causes that led to the problem on the one hand and the dimensions forming the problem itself on the other (Obeidat et al., 1999, p. 24).

Therefore, this step is considered one of the most important initial steps in scientific research that researchers must pay close attention to. Researchers should feel the problem because sensing ambiguity in a particular situation drives them to think about it, attempt to provide the correct interpretation, and follow the appropriate methods to resolve that ambiguity and address the problem. Additionally, defining and feeling the problem encourages many researchers and scholars to take their time before attempting to conduct a study or research a particular issue, since providing a correct answer to a wrong question is far worse than providing an incorrect answer to a correct question. Therefore, researchers and those concerned with scientific research should observe and deeply analyze the dimensions of the problem.

1.2. Considerations when Selecting and Defining the Problem:

When selecting and defining the problem, the following factors must be considered (Al-Qadi & Al-Bayati, 2008, pp. 78–80):

- The problem should be researchable, meaning that hypotheses can be formulated and tested.
- The research problem should be original, if possible, as repeating research does not provide the intended benefit unless the analytical methods and work processes differ.
- The problem and its study should be within the researcher's capabilities in terms of time, effort, cost, and skills.

2. Step Two - Reviewing Previous Studies

It is well-known that many theoretical foundations for proposed studies rely on the results of previous theoretical or field studies that reflect the views of researchers or institutions that conducted them in the past.

Chapter Three: Steps in Preparing Scientific Research

2.1. Concept of Previous Studies:

This step has not received sufficient importance in research methodology. Some have acknowledged it as one of the steps in research, others have ignored it, while some have integrated it with preliminary source studies (exploratory reading). However, we emphasize its importance, as it is a crucial step in scientific research that cannot be overlooked, and it offers many benefits, which will be discussed later. We have not found a specific definition for it, as it is simple and understandable to everyone. In general, previous studies or the literature of the research refers to "all the previous studies that have explored the field of the research problem or the chosen research topic (Al-Dabbagh, 2013, p. 174)."

2.2. Importance of Writing Previous Studies in Scientific Research:

Reviewing previous studies written in the field of the problem offers many benefits, including (Al-Dabbagh, 2013, pp. 175–176):

- **Clarifying the chosen research problem** for the researcher and specifying its dimensions more clearly. Based on this, the research problem and hypotheses can be well-formed based on the comprehensive information provided in the previous studies.

- **Ensuring that the research problem has not been addressed by previous researchers**, as one of the goals of scientific research is to choose a new research problem or to continue what has been studied in similar or related issues.

- **Providing the researcher with new ideas and procedures** that could be beneficial, such as helping them choose a tool or method or design a tool similar to those used successfully in prior research.

- **Obtaining new information about sources** that the researcher could not identify on their own but were mentioned in previous research.

- The researcher benefits from the **experiences of others** to avoid mistakes and pitfalls that previous researchers encountered, and to learn about the methods used to address and avoid those errors.

- **Using the results of previous studies** to design and formulate the hypotheses of the new research.

- **Completing the aspects** where previous studies have stopped, so that the new research complements the series of scientific studies in the researcher's field of specialization.

- **Formulating a comprehensive title for the research** as previous studies assist the researcher in creating a complete research title that is comprehensive, significant, and clear.

2.3. Summarizing Previous Studies:

There is a difference in research culture when presenting previous studies. However, when reviewing most of the academic theses published, whether master's or doctoral, the "Annotated Bibliography" method is commonly used. This involves presenting the name of the researcher who conducted the study, the year the study was done, and a brief summary explaining the study's objectives, methodology, key results, and recommendations. At the end of each section summarizing previous studies, the researcher's comments are presented, sometimes summarizing the main findings (Mobt3ath, 2022).

2.4. Methods for Reviewing and Organizing Previous Studies:

There are five methods for reviewing previous studies, as follows (Mobt3ath, 2022):

- **Chronological Method:** This classification method arranges previous studies according to their dates, from the earliest to the most recent. For each study, the nature of the results reached is clarified. The goal of chronological arrangement

is to understand the development of such studies, making comparisons and noting differences and similarities. Some experts may prefer to arrange the studies in reverse chronological order, from the most recent to the oldest, arguing that newer studies supersede earlier ones.

- **Geographical Classification Method:** After summarizing the previous studies, the studies in the thesis can be categorized according to the location where the study was conducted. Studies can be divided into local, Arab, and foreign studies, with a brief description of each study and the researcher's opinion on it.

- **Titling Method:** In this method, the researcher lists all titles related to the previous studies. Next to each title, a summary of the study is provided through several descriptive sentences, followed by the researcher's comments and critique, if there are any flaws.

- **Relative Importance Method:** The researcher uses this method when a large number of studies have been reviewed. The studies are classified and the most important ones are selected while excluding those that are less important. A small set of studies that the researcher believes will support the scientific research is then summarized.

- **Method Based on the Nature of the Scientific Method:** In this method, the studies are categorized after being summarized based on the nature of the scientific method used, whether quantitative or qualitative.

2.5. Criteria for Selecting Previous Studies:

When selecting previous studies, the following criteria should be taken into account (Mobt3ath, 2022):

- The previous studies should be taken from their primary sources, not secondary sources.
- Do not use studies that have not been published in peer-reviewed journals.

- Choose studies that are closely related to the topic of the study, and avoid studies that are not relevant to the research problem and objectives.
- Avoid a tedious and overly detailed presentation of the selected studies.
- Do not use outdated studies.

3. Step Three- Formulating Hypotheses

The formulation of hypotheses is based on the previous stages of the research (problem identification and review of previous studies), where testable theoretical propositions about the causes of the problem, its different dimensions, and possible solutions are developed.

3.1. Concept of Hypothesis:

Once the problem to be studied and addressed is defined clearly and accurately, the researcher begins to develop hypotheses that explain the various possible and proposed interpretations of the relationship between two factors: one being the independent variable (the cause) and the other the dependent variable (the result), which occurs as a consequence of all the independent or causal factors. A hypothesis is "a statement or several statements that express the possibility of a relationship between an independent variable and another dependent variable (Obeidat et al., 1999, p. 28)."

A hypothesis (or as some refer to it as a conjecture) can be defined as an intelligent guess or inference made by the researcher, which they temporarily hold to be true. It is akin to the researcher's initial opinion in solving the problem. Accordingly, a hypothesis refers to one or more of the following aspects (Qandeelji & Al-Samarrai, 2009, pp. 100–101):

- A potential solution to the research problem.
- An intelligent guess regarding the cause(s) of the problem.

- An initial opinion about how to solve the problem.
- An inference or stance reached by the researcher.
- A temporary explanation for the problem.
- A possible answer to the question represented by the problem.

Regardless of which form a scientific research hypothesis takes, it must be grounded in information, meaning it is not an arbitrary inference or explanation but is based on some information, experience, and background. Furthermore, the hypothesis is a temporary inference and explanation, not a permanent one, which the researcher holds until the end of the research. At that point, the researcher will determine whether the hypothesis is valid. Researchers should treat commonly known facts or axioms as hypotheses. Based on the above, hypotheses typically reflect the causes and dimensions that led to and caused the problem (Qandeelji & Al-Samarrai, 2009, p. 101).

3.2. Formulating Hypotheses:

Hypotheses can be formulated in two ways:

- **Proof Method**: In this case, hypotheses are known as direct hypotheses, and they are phrased in a way that confirms the existence of a positive or negative relationship between two or more variables. This relationship may be directional when the researcher has specific reasons to expect the relationship between two variables, such as the hypothesis "The level of anxiety in students with high IQ is higher than that of students with low IQ." The relationship is non-directional when the researcher expects a difference in the relationship level between the variables but cannot predict the direction of the difference. In such cases, the hypothesis can be phrased as "There are differences in anxiety levels between students with high IQ and those with low IQ (Atwi, 2009, pp. 76–77)."

- **Negation Method**: In this case, hypotheses are referred to as null hypotheses, and they are formulated in a way that denies the existence of a relationship between two or more variables. The researcher denies the presence of differences because they are unaware of any such differences and cannot address them from the beginning of the research. However, they reserve the right to continue with the research. The null hypothesis is easier because it is more specific, thus allowing it to be measured and validated (Atwi, 2009, p. 77).

3.3. Characteristics of Good Hypotheses:

There are several characteristics and attributes that good hypotheses should possess, which the researcher must consider (Atwi, 2009, p. 104):

- **Plausibility of the Hypothesis**: The hypothesis should be consistent with known scientific facts and not be fanciful, impossible, or contradictory to them.
- **Testability of the Hypothesis**: The hypothesis should be formulated in a specific and measurable manner. Therefore, the researcher must take steps and procedures to verify the validity of the hypothesis.
- **Ability of the Hypothesis to Explain the Phenomenon Under Study**: The hypothesis should provide a comprehensive explanation of the situation and, consequently, a general solution to the problem.
- **Applicability and Implementation**: The hypothesis should align with previous research results, as research is interconnected, forming a chain where one link complements the other. If the researcher wishes to prove the opposite, this can be tested within this framework.
- **Clarity of Meaning in Hypotheses**: The researcher should avoid complexity in hypothesis formulation, using simple and unambiguous language in defining them.

- **Identification of the Relationship Between Variables in the Hypothesis**: The researcher should define both the independent and dependent variables.
- **Specific Formulation of the Hypothesis**: This means avoiding generalizations.
- **Avoidance of Personal Bias in the Hypothesis**: The hypotheses should be free from the researcher's preconceived biases.

4. Step Four- Identifying the Types of Data Required for the Research and Their Sources

A researcher needs two types of data to address the problem being studied: secondary data or primary data. Secondary data is readily available, while primary data is gathered by the researcher through a variety of methods. These methods include observation, experimentation, surveys, or a combination of these techniques. Below is an explanation of these methods:

4.1. Observation Method:

When the researcher considers conducting a qualitative study, they plan to collect information through observation. Observation is the process of gathering information by watching people or places. Unlike quantitative research, qualitative research does not utilize tools developed by other researchers; instead, researchers develop their own forms of observation for data collection. Observation has its advantages and limitations. The advantages include the ability to record information as it occurs in reality, the opportunity to study actual behavior, and the ability to observe individuals who have difficulty with verbal expression, such as preschool children. However, limitations include the specificity of observing certain situations and the challenge of forming rapport with the individuals being observed (Al-Dhaman, 2009, p. 94).

Thus, the observation method involves collecting data by observing individuals' behavior in shopping locations and their reactions after making a

purchase. Observation can be carried out by people who watch individuals' behaviors, known as personal observation, or with specific equipment, in which case it is termed mechanical observation.

Personal observation involves the researcher recording individuals' behaviors inside a store without being noticed, or by playing the role of a shopper to gather information about sales staff and the types of goods they focus on selling. Mechanical observation takes various forms, such as scanners used in retail stores to record purchases or eye-tracking devices to measure individuals' eye gaze in response to visual stimuli like advertisements. Brainwave monitors can be used to assess individuals' responses to advertisements, whether emotional or logical.

4.2. Survey Method:

The survey method is one of the most common techniques for gathering primary data, conducted through personal interviews, mail, phone, or the internet.

4.2.1. Personal Interviews:

An interview is a process where the researcher interacts with an individual or a group of people by asking questions and recording their responses. Interviews can take different forms (Al-Dhaman, 2009, pp. 96–97):

- **Structured Interviews:** The researcher asks the participant questions and expects specific answers, where the participant selects responses based on predefined scales (nominal, ordinal, or categorical). This type of interview is commonly used in quantitative research.
- **Unstructured Interviews:** Open-ended questions are used, allowing the participant to provide free responses. This format is used in qualitative research.
- **Semi-structured Interviews:** A mix of both closed and open-ended questions is employed.

Personal interviews are direct interactions between the researcher and research participants, where the researcher asks questions and records the answers immediately.

4.2.1.1. Advantages and Disadvantages of the Personal Interview

Advantages and disadvantages of personal interviews include (Al-Qadi & Al-Bayati, 2008, pp. 78–80; Al-Dhaman, 2009, p. 106):

4.2.1.2. Advantages of the Personal Interview:

- **Review Opportunity:** The researcher can ensure the participant understands the confidentiality of the study or clarify any unclear questions.

- **Clarification of Unclear Responses:** If a participant's answer is brief or unclear, the researcher can ask for a more detailed or comprehensive response.

- **Interview Length:** More questions can be asked during personal interviews, and they can be more detailed compared to other methods.

- **Complete Information:** These interviews allow for the collection of full and accurate information through collaboration between the researcher and the participant.

- **Best for Illiterate Participants:** Personal interviews are often the most effective way to gather data from illiterate individuals.

- **Emotional Insight:** Personal interviews can uncover a range of emotional aspects.

- **Human Problem Diagnosis:** They are valuable for diagnosing and addressing human issues, especially in counseling interviews.

4.2.1.3.Disadvantages of the Personal Interview:

- **Cost:** Personal interviews tend to be more expensive compared to other methods due to costs associated with the people involved in the interviews and transportation.
- **Sensitivity:** Certain situations may require the researcher to invest more time and effort to gather sensitive information.
- **Need for Follow-up Interviews:** If the researcher is unable to reach the participant in the first attempt, follow-up attempts may be needed.
- **Reluctance to Speak:** Some participants may hesitate to speak because they believe their identity is being revealed.

4.2.2. Phone Surveys:

Phone surveys involve a telephone conversation between the researcher and the participant to gather information. Key advantages and disadvantages include (Al-Qadi & Al-Bayati, 2008, p. 125):

- **Speed:** This method is quick because phone calls are usually short and to the point.
- **Cost:** The cost of phone surveys is lower than that of personal interviews.
- **Lack of Direct Interaction:** A disadvantage is the absence of face-to-face interaction, which means the researcher loses the personal connection that can yield deeper insights.

4.2.3. Mail Surveys:

The researcher sends questionnaires via mail to participants, who respond and send the completed forms back. Mail surveys are cost-effective for collecting a large amount of data. The responses tend to be more accurate since there is no interviewer influencing the answers. However, the method has several challenges:

- **Inflexibility:** The researcher cannot clarify questions if participants do not understand them.
- **Address Issues:** There may be problems with participants not having correct addresses or mailboxes.
- **Time Consumption:** Mail surveys take a long time to process, and sometimes the forms are not returned. To overcome these challenges, some companies offer incentives to participants, send reminders, or use email to send the surveys.

4.2.4. Internet Surveys:

The internet is increasingly used for data collection in surveys. Online surveys can be hosted on specific websites, social media platforms, or sent to participants via email. The key advantages of internet surveys are speed and low cost. However, a limitation is that the researcher cannot clarify unclear questions for participants, which could affect the reliability of the answers.

In addition to the above methods for collecting primary data, some researchers use a tool known as a questionnaire, which contains questions directed at the participants. This method will be discussed in more detail in Section Seven.

4.2.5. Questionnaire Method:

4.2.5.1. Definition of the Questionnaire:

The questionnaire is a data collection tool consisting of a set of written questions related to a phenomenon, which the research subject is asked to answer (Al-Najjar et al., 2013, p. 78).

4.2.5.2. Steps to Construct a Questionnaire:

To prepare a questionnaire, the following steps must be followed (Al-Najjar et al., 2013, pp. 78–79):

- Define the study's objective.
- Identify the problem and the required information.
- Define the sample population that will be asked to respond.

– Identify the questionnaire's main themes by breaking down the research topic into its main elements. Typically, the questionnaire starts with demographic information, followed by questions covering all major aspects of the main problem, including the study variables. The questions should encompass the mentioned elements.

– Ensure the questionnaire is clearly printed.

4.2.5.3. Advantages and Disadvantages of the Questionnaire:

The advantages of the questionnaire include (Al-Nawaisa, 2014, p. 80):

– It provides candid and free responses, as it can be sent by mail or other means. Upon return, it is assumed that the participant's name or signature will not be included to avoid embarrassment and to ensure objectivity, free from any accountability or reproach. This aspect is crucial for ensuring honesty and scientific objectivity in the results.

– The questions are uniform for all sample members, whereas the phrasing of some questions may change during interviews.

– The design of the questionnaire and its uniform questions make it easier to compile information into groups, interpret it, and reach appropriate conclusions.

– Respondents can choose a time when they are mentally and emotionally prepared to answer the questionnaire questions.

– The questionnaire allows the researcher to collect a large amount of information from multiple people within a specified time.

– The questionnaire is cost-effective in terms of design and data collection compared to other methods that require greater effort and additional costs, such as travel and movement between locations.

The disadvantages of the questionnaire include (Al-Nawaisa, 2014, pp. 80–81):

– Some questions may not be understood or comprehended uniformly by all sample members, especially if the researcher uses words or phrases with multiple

meanings or unfamiliar terms. Therefore, it is essential to carefully craft the questionnaire questions and test them on a sample group before finalizing the form.

– Some copies may be lost during mailing or by the respondents, so it is necessary to follow up on the responses and prepare additional copies to replace the lost ones.

– The responses to all questions may be incomplete due to negligence in answering certain questions either accidentally or intentionally.

– Respondents may deem some questions not worthy of their time (e.g., if perceived as trivial), so care should be taken in preparing the questions.

– Respondents may feel bored or fatigued, especially if the questionnaire is lengthy or contains numerous questions.

4.2.5.4. Characteristics of a Good Questionnaire:

A good questionnaire is characterized by the following specifications (Al-Nawaisa, 2014, p. 82):

- Clear and understandable language that does not allow for multiple interpretations, as this can confuse respondents and lead to inaccurate answers.
- Consideration of the available time for respondents, ensuring that the questions are not too lengthy to avoid rejection or hasty, inaccurate answers.
- Providing a sufficient number of options for each question, enabling respondents to express their diverse opinions accurately.
- Using polite and gentle language that encourages cooperation and participation in filling out the questionnaire.
- Ensuring logical coherence between the different questions and their relevance to the research topic and problem.
- Avoiding embarrassing questions that may discourage respondents from answering the questionnaire.

- Steering clear of complex questions that contain multiple ideas about the topic being investigated, as they may confuse the respondents.
- Providing respondents with a set of instructions and clarifications on how to answer, explaining the purpose of the questionnaire and the use of the information the researcher will collect. For example: Some questions may require selecting more than one box, so respondents are asked to check the boxes that reflect the correct answers.
- It is recommended to send an envelope with the researcher's full address and a postage stamp to facilitate the return of the completed questionnaire.

5. Step Five- Data Review and Analysis

Whether secondary or primary data is collected, a comprehensive review of the obtained data must be conducted. The goal is to exclude incomplete data and discard any type of data that is either directly or indirectly unrelated to the research or study topic. It is important to emphasize the utmost significance of reviewing primary data by following a scientific methodology that ensures that only data relevant to the topic is entered into the computer system for statistical analysis. The data analysis process begins with reviewing the data, excluding incomplete questionnaires, then encoding them using specific codes, and organizing them into frequency distribution tables and other tables based on the type of statistical methods used for this type of study (Obeidat et al., 1999, p. 30).

6. Step six- Writing and Presenting the Study Results

After completing the data analysis using the appropriate statistical methods for the study topic, the phase of writing the results and discussing them begins, with the aim of publishing or presenting them to relevant stakeholders. Practically, this final phase is one of the most important, as its success largely depends on the researchers' skills, objectivity, the quality and level of statistical analysis, and the method of deriving the results (the implications and recommendations to be

presented to decision-makers in the institutions involved in the studies that were conducted) (Obeidat et al., 1999, p. 30).

References of Chapter Three:

- Ghazi, A. (2007). *Manhajiyat I'dad Al-Bahth Al-'Ilmi* [Methodology of Scientific Research Preparation]. Dar Al-Manahij for Publishing and Distribution.
- Obeidat, M., et al. (1999). *Manhajiyat Al-Bahth Al-'Ilmi: Al-Qawa'id Wa Al-Marahil Wa Al-Tatbiqat* [Scientific Research Methodology: Rules, Stages, and Applications] (2nd ed.). Dar Wael for Publishing.
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- Atwi, J. A. (2009). *Asaleeb Al-Bahth Al-'Ilmi: Mafahimuhu, Adawatuhu, Turuquhu Al-Ihsa'iyya* [Methods of Scientific Research: Concepts, Tools, and Statistical Methods]. Dar Al-Thaqafa.

- Al-Dhaman, M. (2009). *Asasiyat Al-Bahth Al-'Ilmi* [Basics of Scientific Research] (2nd ed.). Dar Al-Maseera for Publishing and Distribution.
- Al-Najjar, F. J., et al. (2013). *Asaleeb Al-Bahth Al-'Ilmi: Manzur Tatbiqi* [Scientific Research Methods: An Applied Perspective] (3rd ed.). Dar Al-Hamed.
- Al-Nawaisa, F. A. R. (2014). *Asasiyat 'Ilm Al-Nafs* [Basics of Psychology]. Dar Al-Manahij.

Chapter Four: Thesis Organization Outline According to the IMRAD Method

Chapter Four: Thesis Organization Outline According to the IMRAD Method

This chapter will discuss the newly introduced methodological approach for preparing theses, dissertations, and research papers, known as the IMRAD method. We will attempt to provide an overview of this method, as well as some details about the content of research that follows this approach.

1. Overview of the IMRAD Method

To avoid confusion and redundancy, many methodology experts have emphasized the need to adopt a clear, systematic, scientific approach that researchers can rely on when preparing their studies. This method does not rely on replicating what has been written by others to form the major part of the thesis/dissertation. Instead, it gives greater attention to and a larger proportion to the researcher's contribution. Therefore, the importance of scientific research is not assessed based on size (number of pages). While balance is not required, it is preferred. The primary goal is to achieve the research objectives through well-structured, methodical steps. The researcher's personal contribution should account for at least 80% of the thesis or dissertation (including the review of literature and the applied section), with the remaining 20% allocated to the theoretical bibliographic study (Bekhti, 2015, p. 26).

Regarding the number of pages, master's theses are typically between 60-90 pages, while master's research papers range from 70-100 pages. PhD dissertations have a larger page count, typically exceeding 100 pages, which reflects the researcher's actual personal contribution, excluding the theoretical framework, appendices, references, and index (Bekhti, 2015, p. 26).

This method is known as the IMRAD approach, which is one of the most popular methods that makes it easier for researchers to navigate and review

different sections of the thesis/dissertation quickly. It is widely used in medical, precise sciences, economic sciences, and other disciplines that rely on case studies. The IMRAD structure is built around four main sections (Bekhti, 2015, p. 26):

- **Introduction [I]**
- **Methods and Tools [M]**
- **Results [R]**
- **And [A] Discussion [D]**

The use of the IMRAD method is considered more logical, simpler, and sequential compared to other traditional methods. It is characterized by the clarity of its sections.

2. Thesis Organization Outline According to the IMRAD Method:

The application of the IMRAD method varies depending on the field of study, its nature, and its needs. Therefore, we will focus on detailing the structure for fields within economics, business, and management studies according to the following outline (Bekhti, 2015, pp. 27–28):

- Upper external cover.
- Blank page.
- Internal cover.
- Dedication.
- Acknowledgments.
- Abstract.
- Table of Contents.

Chapter Four: Thesis Organization Outline According to the IMRAD Method

- List of Tables.
- List of Figures.
- List of Appendices.
- List of Abbreviations and Symbols.
- Introduction.
- Introduction to Chapter One.
- Chapter One: Literature Review.
  - Section One: Theoretical Framework.
  - Section Two: Previous Studies.
- Summary of Chapter One.
- Introduction to Chapter Two.
- Chapter Two: Field Study.
  - Section One: Methods and Tools.
  - Section Two: Results and Discussion.
- Summary of Chapter Two.
- Conclusion.
- References.
- Appendices.
- Index.
- Blank page.
- Lower external cover.

Chapter Four: Thesis Organization Outline According to the IMRAD Method

3. Important Details About the Introduction, First and Second Chapters, and Conclusion in Theses Prepared According to the IMRAD Methodology

3.1. Introduction:

The introduction of the thesis is expected to answer the question: Why was this study conducted? Since it is written last, it is considered crucial as it includes several elements that provide a comprehensive and concise overview of the study, its scope, significance, divisions, and more. The introduction should not exceed three pages.

The introduction includes the following elements:

- Prelude
- Statement of the problem
- Research hypotheses
- Justification for choosing the topic
- Research objectives
- Importance of the study
- Scope of the study
- Methodology and tools used
- Literature review
- Research challenges
- Structure of the study

3.2. Chapter One: Literature Review:

Chapter one provides the theoretical background encompassing both theoretical and applied literature.

Chapter Four: Thesis Organization Outline According to the IMRAD Method

The chapter begins with an introduction, which serves as a necessary opening. This section is assigned a separate page, and it outlines the topic, objectives, and main elements of the chapter. Chapter one consists of two sections:

- **Section One**: Theoretical Literature: This section covers the theoretical foundation and fundamental concepts directly related to the study's topic.
- **Section Two**: Applied Literature: This section includes previous research and studies, highlighting the anticipated added value of the current study.

If the study involves more than one variable (i.e., two or more), the researcher assigns the second section to the theoretical relationships between the variables of the study and follows it with a third section on applied literature, while keeping the first section unchanged.

At the end of Chapter One, the researcher summarizes the key conclusions and insights from the chapter in a separate page, linking the chapter to the subsequent one with a logical, smooth transition.

3.3. Chapter Two: Field Study:

This is the core and central part of the thesis, the purpose and foundation of the study. It is the final chapter dedicated to the applied study.

The chapter begins with an introductory section, which is assigned a separate page. This section is important as it mentions the general topic, objectives, and main components of the chapter. Chapter two consists of two sections:

3.3.1. Section One: Contains two parts:

3.3.1.1. Methodology: This part includes the following elements:

- Selection of the study population and sample
- Definition of variables, their measurement, and data collection methods

- Summary of the collected data

3.3.1.2.Tools: This part includes:

- Tools used for data collection
- Statistical tools used
- Programs used for data processing

3.3.2. Section Two: Like the first section, this includes two parts:

3.3.2.1. Results: This part should:

- Present the results (statistical analysis outcomes) in an organized, systematic manner.
- Use illustrative methods such as tables, figures, and data.

3.3.2.2. Discussion: This part should:

- Interpret, analyze, and explain the results.
- Relate the findings to the hypotheses and compare them.
- Draw conclusions and propose solutions.

At the end of Chapter Two, the researcher provides a "Summary of Chapter Two" on a separate page, focusing on the key conclusions that should be highlighted.

3.4. Conclusion of the Thesis:

The conclusion, often called the "Summary," is the essence of the study. It is separated from the final chapter by being assigned an independent section. The conclusion typically spans two to four pages.

Methodologically, the researcher should organize the conclusion carefully, considering the following elements:

Chapter Four: Thesis Organization Outline According to the IMRAD Method

- A brief summary of the topic, reiterating the study's problem.
- Key field results obtained from the study.
- Testing of the research hypotheses: confirming or rejecting them with justification, based on the field study and its results.
- Study recommendations: Here, the researcher suggests the most relevant recommendations that serve the study's problem and objectives.
- Future research directions: The researcher includes important future studies and research ideas inspired by the findings of the current research, as the field study has uncovered research gaps that are worth further investigation and attention in future studies. These represent the starting point for future research.

References of Chapter Four:

- Bakhti, I. (2015). *Al-Daleel al-Manhaji li 'Idad al-Buhuth al-'Ilmiya (Al-Mudhakkira, al-Atroha, al-Taqrir, al-Maqal) wafq Tariqat IMRAD* [The Methodological Guide for Preparing Scientific Research (Theses, Dissertations, Reports, Articles) According to the IMRAD Method] (4th ed.). University of Qasdi Merbah - Ouargla. Algeria.

Chapter Five: Techniques for Organization and Formatting (Page Layout, Font, Numbering, Tables, and Figures)

Chapter Five: Techniques for Organization and Formatting (Page Layout, Font, Numbering, Tables, and Figures)

This section will address how to set the dimensions of research paper pages and prepare tables, figures, and appendices.

1. Page Setup, Font, and Numbering

1.1. Page Setup

To meet the requirements of academic research, authors must focus on the formal aspects of their written work. One of the most critical aspects is the preparation of the page layout, including margins (right, left, top, and bottom). Proper formatting depends on the type of research being produced, as formatting for journal articles differs from that for theses, dissertations, or books.

Generally, for theses and dissertations, a margin of **3 cm on the right** and **2 to 1.5 cm on the left** is recommended. Additionally, **2.5 cm margins** should be left at the top and bottom of each page.

For printing purposes, the standard **A4 paper size** is used for theses and dissertations.

1.2. Font and Spacing

The font type used in research papers varies based on the institution or journal's guidelines, and selecting an appropriate font style enhances the research's readability. Commonly used fonts for research written in Arabic include **Simplified Arabic**, whereas **Times New Roman** is suitable for English text, numbers, and mathematical or statistical formulas.

Below is an example of font settings for research papers:

- **Text Font**: Simplified Arabic, size **14**.
- **Line Spacing**: **1.5** for the main text, but **single spacing (1)** for abstracts.

- **Main Headings**: Font size **16**, bold.
- **Subheadings**: Font size **14**, bold.
- **Side Headings**: Font size **12**, bold.
- **Cover Page Text**: Simplified Arabic, size **16**, bold.
- **Research Title on Cover**: Simplified Arabic, size **22**, bold.
- **Page Numbers**: Centered at the bottom of the page, using **Times New Roman**, size **12**.
- **Footnotes and References**: Simplified Arabic, size **10**.

1.3. Page Numbering

The approach to page numbering varies depending on the type of research. For example, in short academic works like articles and conference papers, numbering starts at the introduction and continues sequentially through the final page using Arabic numerals (e.g., 1, 2, 3...).

For more extensive research, such as theses or dissertations, page numbering differs by section:

- Pages preceding the introduction (excluding the dedication and acknowledgments) use **Roman numerals** (e.g., i, ii, iii...).
- Pages in the introduction are numbered with **alphabetic letters**.
- Pages in the main content after the introduction use **Arabic numerals** (e.g., 1, 2, 3...).

2. Preparing Tables, Figures, and Appendices.

Researchers often need to include tables in their research to summarize ideas, compare variables or terms, or present statistical data. These tables play a critical

role in analysis, offering insights through descriptive and numerical information. Below is a guide for preparing tables.

2.1.Preparing Tables

2.1.1. Definition of a Table:

A table is simply defined as a "quantitative representation of the studied phenomenon." It is also described as "a structured and organized framework presenting data and figures related to the investigated phenomenon (Al-Dabbagh, 2013, p. 253)."

2.1.2. Types of Tables:

Tables can be categorized into:

2.1.2.1. Simple Tables: These consist of two columns or rows, with one representing possible states of the phenomenon and the other containing data for each state (Al-Dabbagh, 2013, p. 253).

Example: Table 01 provides a model for simple tables.

Table 01: Evolution of Algeria's Population (2017–2021, in millions)

Year	Population
2017	41.14
2018	41.93
2019	42.71
2020	43.45
2021	44.18

Source: National Office of Statistics (www.ons.dz).

2.1.2.2. Composite Tables: In these tables, the variables of the studied phenomenon are horizontally divided into two or more sections (Al-Dabbagh, 2013, p. 254).

Example: Table 02 provides a model for composite tables.

Table 02: Number of Faculty in the College of Economics by Academic Rank

College Departments	Professors		
	Assistant Professor	Associate Professor	Full Professor
Economics	04	29	13
Commerce	02	25	12
Accounting	04	22	15
Management Sciences	03	23	14
Common Core Department	01	19	09

***Source**:* Prepared by the researcher based on documents received from the Faculty Administration.

2.1.2.3. Cross Tables: These include data from two or more phenomena simultaneously.

Example: Table 03 provides a model for cross tables.

Table 03: Number of Faculty in the College of Economics by Academic Rank and Gender

College Departments	Professors					
	Assistant Professor		Associate Professor		Full Professor	
	Male	Female	Male	Female	Male	Female
Economics	3	1	12	17	11	2
Commerce	1	1	10	15	11	1
Accounting	3	1	5	17	12	03
Management Sciences	2	1	10	13	11	3
Common Core Department	01	00	8	11	4	5

***Source**:* Prepared by the researcher based on documents received from the Faculty Administration.

2.1.3. Rules and Conditions for Presenting Tables:

The presentation of tables in academic research follows these guidelines (University of Sharjah, 2010, p. 12):

- Include a table only when necessary to present repetitive data that clearly highlights a result or conclusion.
- Avoid using a table if the data can be written in fewer lines or less space.
- The table title should be concise yet comprehensive, adhering to the characteristics of a thesis/dissertation title.
- Each table should be self-explanatory, providing all necessary details for understanding without referring to the main text. Any abbreviations or additional notes should be included as footnotes below the table.
- Place each table on a separate page immediately following the page where it is first mentioned in the text. If multiple table numbers are cited on one page, include the tables sequentially on subsequent pages.
- Assign each table a sequential number and brief title.
- Omit any unnecessary data, such as excessive decimal places or irrelevant experimental numbers.
- The table's dimensions should not exceed the allowable print area on the page, and typically, a table should fit within one page.

2.1.4. Preparing and Formatting Tables:

Follow these steps for table preparation:

- Use a **Font Size 12 Bold** for table titles, placing them at the top of the table.
- Position the table as close as possible to its first mention in the text or on the next page.
- Write the table title above the table, preceded by "Table" and its number (e.g., *Table 01*).
- Number table pages sequentially along with the main document pages.

- Cite the source of data below the table.
- Use a font size for the source that is one or two points smaller than the text font size. For example, if the text uses font size 14, the table source can be in font size 12 or 13.

2.2. Preparing Figures

2.2.1. Definition of Figures

Figures refer to graphical representations such as charts, graphs, geometric diagrams, maps, photographs, and other visual aids collectively termed illustrative figures. These are formatted similarly to tables.

Figures must be clear and easy to read, with their number referenced in the text and accompanied by an explanation of their key elements and intended message for the reader. Several principles should be followed when including figures and images in research work (University of Sharjah, 2010, p. 13):

- Use figures and images if they provide additional value beyond what tables offer or highlight critical data leading to specific conclusions.
- Reference figures in the text using their assigned numbers, and ensure sequential numbering in Arabic numerals based on their first appearance.
- Ensure labels, axis values (for X and Y axes), and any text within the graphical representation are legible and appropriately sized for readability.
- Keep the figure's boundaries within the printable area of the page.
- Assign a concise and descriptive title to each figure, clearly conveying its purpose to the reader.

2.2.2. Preparing Figures

Figures should be prepared as follows:

- The title of the figure should be in **Font Size 12 Bold** and positioned above the figure.
- Place the figure as close as possible to its first mention in the text or on the subsequent page.
- Write the title above the figure, preceded by the word "Figure" followed by its number, e.g., *Figure 01*.
- Ensure figure pages are numbered sequentially along with the rest of the thesis or research paper.
- Cite the source from which the figure was adapted at the bottom of the figure.
- Use a font size for the source that is one or two points smaller than the text font size, e.g., if the text is in size 14, the source citation can be in size 13 or 12.

2.3. Preparing Appendices

2.3.1. Definition of an Appendix

An appendix is a supplementary section at the end of a research paper that includes tables, figures, images, documents, or equations that the researcher deems essential but cannot include in the main body of the paper to maintain its readability.

Researchers often use appendices to incorporate critical documents, data, or other materials that complement the main text. Appendices are referenced in the text using their designated numbers.

Examples of Appendices Include:

- Statistical tables and lists created by the researcher.
- Legal or historical documents, samples, photographs, or evidence utilized in the study.

- Proofs of theories and equations.
- Questionnaires.

References of Chapter Five:

- Al-Dabbagh, I. M. A. (2013). *Usul al-Bahth al-'Ilmi wa Manahijuhu fi 'Ilm al-Siyaha* [Principles and Methods of Scientific Research in Tourism Science] (1st ed.). Al-Waraq Publishing and Distribution. Jordan.
- *Daleel Kitabat al-Rasa'il al-Jami'iyya fi Jami'at al-Sharjah* [Guide to Writing University Theses at the University of Sharjah]. (2010, 3rd ed.). University of Sharjah. Sharjah. (Same reference).

Chapter Six: Editing Techniques (Punctuation Marks, Citation, Footnotes, Reference Ordering)

This section discusses the editing techniques specific to scientific research. These techniques include punctuation marks used in academic writing, citation rules, footnotes, as well as referencing and organizing sources.

1. Punctuation Marks and Citation

Many master's and doctoral theses lack precise usage of punctuation marks, which negatively impacts the quality of the work, especially when they are riddled with linguistic and typographical errors, let alone their scientific weakness. Since precision in expression is a fundamental requirement for scientific research written in Arabic—particularly in social sciences—using punctuation marks becomes essential. Proper use of punctuation ensures clarity and removes ambiguity for the reader.

As previously mentioned, punctuation marks and citations are crucial. Researchers must adhere to these conventions when incorporating them into their work. Below are some of the most important punctuation marks:

1.1. The Period (.)

The period is used for various purposes, most notably (Sini, 1994, pp. 494–495):

- To end a complete sentence grammatically, whether nominal, verbal, or compound, thus conveying an independent meaning. Periods may also be used within quotation marks if the quoted sentence is self-contained, especially if it is lengthy. For example:

  - *The book included Ibn Al-Salah's statement: "This is a Hadith with an authentic chain of transmission, without being called an authentic Hadith."*

  - In the case of parenthetical sentences, it is generally preferred to move them to footnotes if they are long or constitute a complete sentence in terms of

grammar and meaning. Nevertheless, a period may also be placed within the parentheses if the sentence is self-contained, for example:

(See the commentary on the text in the first section of Chapter Two.)

- The period is placed immediately after the closing parenthesis or quotation marks if the sentence ends with these, and they enclose a word, phrase, or subordinate clause that is not complete by itself. For example:

The author confirmed that what Al-Bukhari and Muslim reported is "indisputably authentic."

- It is preferred to use a period after numbered paragraphs that begin on a new line, even if they are not complete sentences, to facilitate reading.

The following conditions must be met:

- It must be novel.
- It must merit research.

Instead of using a comma, a period is clearer, especially as numbered paragraphs might contain complete sentences or multiple complete sentences.

- Periods may also be used after abbreviations or shortened names. For example:

P.O. (Post Office).

1.2. The Question Mark (?)

A question mark is typically used to end an interrogative sentence and replaces the period in cases of questions. It applies regardless of whether the sentence begins with an interrogative word. Notably, there are distinctions in its usage (Sini, 1994, pp. 495–496):

- A standalone interrogative sentence ends with a question mark, as the speaker awaits an answer. For example:

Who is your Lord?

- An interrogative sentence used as part of a quotation ends with a question mark within the quotation marks, as the original speaker awaited an answer. For example:

The angel asks him: "Who is your Lord?"

- If the interrogative sentence is part of a declarative sentence but is not enclosed in quotation marks, no question mark is used. For example:

The angel asks him who his Lord is.

- A question that is more about polite request or guidance rather than inquiry also ends with a question mark. Such sentences often appear within quotation marks in academic writing, particularly in literary analyses. For example:

"Would you kindly bring those documents?" (A manager speaking to an employee)

"May I speak?" (A colleague speaking to another or a student addressing a professor)

The general rule is that a question mark is used when the speaker anticipates an answer or response. However, if no such anticipation exists during the utterance, a question mark is only placed within quotation marks to reflect the original context in which the sentence was spoken, where the original speaker expected an answer or reaction.

1.3. The Exclamation Mark (!)

Also known as the mark of emotion, the exclamation mark is used to express emotional reactions to unexpected or disapproved events. It may indicate surprise, admiration, joy, sorrow, sarcasm, or caution, and serves as a substitute for the period.

In general, this mark conveys emotions rather than thoughts. Thus, it is rarely used in scientific writing unless it appears as part of a direct quotation within quotation marks. For example (Sini, 1994, p. 496):

- *Is there a god alongside Allah!*
- *Wonderful!*
- *Alas!*
- *What a disappointment!*
- *Beware, beware!*

1.4. Ellipsis Marks (...):

Ellipsis marks, arranged horizontally, are used in the following cases (Sini, 1994, p. 497):

- These three consecutive dots are used to alert the reader to an omission within a directly quoted text. They should appear within quotation marks or their equivalents. For example:

"This is the view held by adherents of other religions, including Jews and Christians... which contradicts the scripture and the Sunnah."

- Ellipsis marks may also be used outside quotation marks for the same purpose, often to avoid repeating words or phrases previously mentioned. They can also

represent conclusions implied by a preceding phrase or sentence that the reader is expected to recognize or infer. For instance:

Not everything is like arithmetic. One plus one equals two, and one hundred plus one hundred...

Ellipsis marks should generally not be used at the beginning of a new sentence unless they appear within quotation marks as part of a direct quote. They typically occur in the middle or at the end of a sentence, whether within or outside quotation marks.

1.5. Comma (,):

Commas have various uses, including the following (Sini, 1994, pp. 497–498):

- A comma separates parenthetical phrases or clauses from the main sentence when the parenthetical element can be omitted without affecting the grammatical correctness or meaning of the main sentence. It serves as an alternative to parentheses to distinguish a descriptive phrase or clause that elaborates on a preceding word or phrase. A comma is placed at the beginning and end of the parenthetical phrase unless the main sentence concludes immediately after. For example:

The university president visited the College of Dawah, which was originally established to train and qualify individuals in fields that support Islamic outreach.

- Commas may separate three or more words or phrases, functioning as an alternative to conjunctions. For example:

The College of Dawah consists of: the Dawah Department, the Media Department, and the Oriental Studies Department...

- Commas may appear alongside conjunctions to distinguish major categories from their subcategories. For example:

The College of Dawah includes: the Department of Dawah and Hisbah, the Media Department, and Oriental Studies and Missionary Work.

- A comma can replace a preposition linking two or more phrases. For instance: *P.O. Box 1117, Medina, Saudi Arabia.*

This usage is common in writing addresses, especially when written in a single line rather than broken into multiple lines.

- Commas separate short, grammatically complete sentences that together form a longer sentence. For example:

The title was captivating, the author renowned, and the content excellent, bringing together all the elements of a successful book.

- A comma is placed immediately after the closing parenthesis but never before the opening parenthesis. For instance:

A comma follows the closing parenthesis (see parentheses), if necessary, without any space.

1.6. Semicolon (;):

Semicolons are generally used to connect two independent clauses that could stand alone grammatically but are more meaningful when connected. The following are specific cases (Sini, 1994, pp. 498–499):

- Semicolons are used to distinguish between two clauses that can stand independently but are fundamental parts of a single sentence. For example: *There are four levels in the undergraduate program; each level is divided into two semesters.*
- Semicolons separate primary elements that contain subordinate elements. For example:

There are four cities in the world with populations exceeding ten million: Tokyo, Japan; London, United Kingdom; New York, and Los Angeles, United States.

- Semicolons can separate multiple sources listed within a single footnote. For example:

Ibn Taymiyyah, p. 111; Ibn Baz, p. 222.

1.7. The Colon (:)

The colon is generally used in the following cases (Sini, 1994, pp. 499–500):

- **To alert the reader that text will follow**, whether or not it is preceded by the verb "said" or its derivatives. For example:

He said: "Despite differences among scholars in minor issues, they agree on the fundamentals."

- **To signal that details will follow**, regardless of whether the preceding sentence is grammatically complete or not. For instance:

The Faculty of Sharia and Fundamentals of Religion in Qassim consists of several departments:

- Department of Quran and its Sciences
- Department of Sunnah and its Sciences
- Department of Jurisprudence
- Department of Fundamentals of Jurisprudence
- Department of Creed and Contemporary Sects
- Department of Dawah and Culture
- Department of Economics

- **To introduce numbered or lettered details or sequential divisions**, either vertically or horizontally. For example:

Plan components:

- Title
- Motivations
- Problem definition

Similarly:

The analysis comprises three steps:

1) Compiling the scientific material, 2) Categorizing it, 3) Arranging its types.

- To separate the name of a Quranic chapter from its verse number, the hour from minutes, or volume numbers in periodicals from specific pages. Examples include:

Al-Fatiha: 3

The clock showed: 12:50

- To conclude a subtitle that begins at the start of a line. For example: Plan components:

There are essential and secondary elements. The essential elements include: the title, problem identification.

1.8. The Dash or Double Dashes (-)

The dash, whether single or double, is used for various purposes, including (Sini, 1994, pp. 500–501):

- To indicate a range between two values, with or without spaces between the values and the dash. For example:

430-470 or 430 - 470

- To separate a number and its related item. For example:

First- Title, A- Title, or 1- Title

- To separate two parts of a sentence, where the first part is lengthy, and the second part explains or emphasizes it, similar to some uses of the comma. In such cases, a period at the end of the secondary phrase replaces the second dash. For instance:

Adherence to punctuation rules in certain cases is absolutely necessary - as previously mentioned.

- To function like parentheses, enclosing an explanatory phrase that can be omitted without affecting the sentence's meaning. The phrase is separated by equal spacing on both sides. For example:

The author - may God have mercy on him - mentioned...

- To clarify shared names when gender distinctions are required. For example: *Saud - researcher - and Saud - researcher (female) - agreed...*

1.9. Parentheses ()

Parentheses are used in the following cases (Sini, 1994, pp. 501–502):

- To enclose non-essential information that explains or clarifies part of a sentence. For instance:

Al-Shaabi (with an open "sh") was one of the followers who stayed close to Caliph Ali ibn Abi Talib for a long time.

The term Sunnah (one of the rulings in Islamic law, situated between obligatory and permissible) has several synonyms, including Mandub, Mustahabb, and Nafila.

- To enclose comments that may not provide clarification or explanation. For example:

Jesus (peace be upon him).

Abu Bakr Al-Siddiq (may Allah be pleased with him).

- To refer to other locations within the same book. For instance:

(See the chapter on Facts.)

- To include citations indicating the author's name, publication year, and page number after a quoted or paraphrased text. For example:

(Sini 1994, p. 117)

- For numbered points or footnotes, sometimes omitting the first parenthesis. For example:

The parentheses serve three purposes: (1) for explanatory phrases, (2) for citations, (3) for numbering.

Alternatively: Parentheses serve three purposes: 1) for explanatory phrases...

- As substitutes for quotation marks, especially for sacred texts like Quranic verses or Hadiths. They may also be doubled or adorned.
- To emphasize specific names, titles, or terms, particularly when they are within direct quotations or to distinguish foreign names written in Arabic. For example: *"In his book (Introduction to Islamic Media), he pointed out some rules for grounding human sciences."*
- In mathematical equations.
- To accompany sequential numbers, such as footnotes, whether in the text or at the bottom of the page.

1.10. Square Brackets [ ]

Square brackets have uses that may overlap with dashes and other functions, including the following (Sini, 1994, pp. 502–503):

- These brackets are used to add information to an edited, quoted, or translated text. The addition may clarify a particular point in the quoted text, correct an error, or complete a deficiency in the original text. For example:
  - Al-Tirmidhi "is Abu Isa Muhammad ibn Isa al-Tirmidhi, born [in the year 209]."
  - "He was informed by Sheikh Imam Alim Abu Jaafar Mubarak ibn Mubarak [ibn] Ahmad ibn Zariq the blacksmith."
- Square brackets are also used for a parenthetical phrase or word inserted within parentheses. For example:

(See the results of the control group [n=7] also in Table 2.)

- Square brackets may be placed around the title of a paragraph or section added to the verified text, signaling that everything under that title is the editor's addition. For example:

[Explanation of Uncommon Terms]:

(With date): A type of high-quality dates from Medina.

(Savoring it): To relish what remains in the mouth from food remnants.

- They are also used in expressing mathematical equations.

1.11. Curly Braces { }:

Curly braces come in various types, with the most common being those used in quoting Quranic verses or representing some mathematical operations (Sini, 1994, p. 503).

1.12. Quotation Marks " "

Quotation marks are primarily used to indicate the beginning and end of a direct quotation, though they have other applications (Sini, 1994, pp. 504–505):

• Quotation marks are placed around a direct quotation (verbatim text) to delineate its start and end. Paraphrased content does not require them. For example:

Ibn al-Qayyim said: "These people neither claim ijtihad nor admit to taqlid."

For lengthy verbatim quotations, it is preferable to start a new line, especially when the text contains multiple paragraphs. Such text should be presented in a new paragraph, distinct with shorter, closely spaced lines, and without quotation marks. Length is relative, but any text exceeding two lines is generally treated this way. For example:

Al-Hafiz Ibn Hajar Al-Asqalani stated in *"Annotations on the Book of Ibn al-Salah"*:

"The apparent wording of the author suggests that the hadiths in the five books
are all reliable for evidence, but this is not entirely true. There are many hadiths in them that are not suitable for evidence, and some are even unfit for citation from the narrations of disreputable transmitters."

• Quotation marks are used to distinguish the titles of articles published in journals by placing the title within them when citing. For example:

Sharif, Hussein Ahmed, "The Role of Communication Tools in Raising Environmental Awareness Among Children," *Arab Center for Research on Listeners and Viewers*, 1989, Issue 26: 97–103.

•They are used to designate text exactly as the author intended, even if it is not quoted. This text may be a word, phrase, title, name, or sentence. For example:

Identify the correct sentence from the following:

- "The initial list of topics in the research plan is the research methodology."

− Discuss this statement, providing necessary evidence in cases of rejection or approval.

- Single quotation marks are used within double quotation marks for nested quotations. For example:

The research methodology instructor said:

"The precision of the selected research title reflects the accuracy of the plan. Once, I asked a student about a title for a jurisprudence research paper not exceeding ten pages, and he replied:

'Prayer in Islam.' What do you think of this title?"

- Quotation marks are used to distinguish foreign names to avoid confusion with adjacent letters or words. For example:

According to "Atwood" and "Schram"...

1.13. The Forward Slash (/)

The forward slash has several uses (Sini, 1994, p. 505):

- It is used to indicate subdivisions and is common in the numbering of official documents. For example:

4411/A/M

(This means that "M" is the primary division, "A" branches from it, and the number is a serial under "A.")

- It substitutes for the line separating the numerator and denominator in fractions and may be inverted in Arabic. For example:

1/4=0.251/4 = 0.251/4=0.25

- It is also used to separate day, month, and year in dates. For example:

11/11/2012, 1414H/

- It may indicate "or" in cases involving multiple words or short phrases.
- It may also separate the title of a book from the author's name.

1.14. Sequential Numbering (First – 1 – A):

It is preferable, when using words for ordering or letters or numbers to indicate the sequence of several points linked by a single connection, to begin with written sequence (First, Second, ...) then use numbers (1, 2, 3, ...) for the subsequent subdivisions, followed by alphabetical letters in order (A, B, C, D, ...) for the divisions under the numbers (Sini, 1994, p. 506).

2. Citation in Scientific Research

2.1. Citation:

2.1.1. Concept of Citation:

Citation is one of the essential elements in writing research papers. Referring to existing ideas, opinions, studies, research, and information and drawing upon the work of others enhances the scientific research process and contributes to the accumulation of scientific knowledge. Thus, citing this knowledge, whether directly or indirectly, is common in most research reports. Researchers must cite portions of existing scientific knowledge that align with the research topic and the purpose of the study, and it also depends on the scientific background used to study and analyze the topic (Al-Qadi & Al-Bayati, 2008, p. 278).

Researchers resort to citation to achieve the following objectives (Atori, 2009, p. 244):

- To identify and evaluate previous ideas on the topic and their authors.
- To generate new ideas by analyzing the thoughts and opinions of other researchers.

- To gather diverse viewpoints on a specific topic, leading to a better understanding of it.
- To support the researcher's perspective by referencing the opinions of others.
- To meet the requirements and standards of scientific research.

2.1.2. Types of Citation:

There are two types of citation (Al-Sirfi, 2008, pp. 365–366):

2.1.2.1. First type: Direct (literal) citation: In this type, the researcher directly transfers the ideas of others without changing or altering the wording. This is done either because the researcher believes the quoted idea significantly supports their argument or to comment on the quoted idea.

For direct citations, the following conditions apply:

- Avoid altering the words or phrasing.
- If the citation is no more than six lines long, it should be included in the main body of the text, enclosed in double quotation marks (" ").
- If the citation exceeds six lines, it should be separated from the main text and formatted as follows:

  - Do not use quotation marks at the beginning and end of the citation.
  - Leave a margin to the right and left of the citation, which should be wider than the margin used for paragraphs, with the length of the margin equal to the beginning of a new paragraph in the main text.
  - The line spacing for this citation should be narrower than the line spacing of regular text.

- If the researcher needs to omit some words, they should place three dots (...) to indicate the omission. If an entire paragraph is omitted, a series of dotted lines (:::::) should be used to indicate how many lines were omitted.

- If the researcher wants to correct a quoted phrase or add a word, they may do so by placing the correction or addition in parentheses () if it does not exceed one line. If it exceeds one line, it should not be included in the body of the text, but rather in a footnote with a reference to the source.

- It is preferable not to exceed half a page of direct citation at one time.

2.1.2.2. Second type: Indirect (paraphrased) citation: In this type, the researcher takes the idea without copying the exact words from the original text. The researcher can choose one of the following approaches:

- If the material to be cited is lengthy, the researcher should summarize it while retaining the original idea. If the material exceeds one page, it is not acceptable to quote it directly; rather, it should be summarized and the source must be cited.

- If the material to be cited is short, the researcher can rephrase it in their own words, ensuring the meaning is not distorted or altered and the source is properly cited.

2.1.3. Citation Rules:

Researchers should adhere to the following rules when citing (Bin Shalhoub, 2015, pp. 35–36):

- **Scientific integrity** requires citing the sources from which the material was quoted.

- **Accuracy** involves avoiding distortion of meaning by omission or addition.

- **Objectivity** means not limiting citations to only those supporting the researcher's viewpoint and neglecting sources that present opposing views.

- **Moderation** in citation means the research should not become a mere collection of others' ideas without the researcher's own contribution.

- **Clarity** in citation means ensuring it is clear whether the material is cited directly or indirectly.

- **Legality** means adhering to the legal limits on citation, and in some cases, obtaining permission from relevant authorities.

- **Relevance** means ensuring that the ideas being cited are related to the research and avoiding unnecessary filler.

- **Avoiding unreliable sources** means refraining from citing unverified or scientifically untrustworthy sources.

2.2.Footnotes (Endnotes):

2.2.1. Concept of Footnotes:

Footnotes refer to the scholarly material that appears at the bottom of a page, chapter, or end of a paper in the form of closely spaced lines, aimed at clarifying a concept or providing information about a reference cited or quoted. The main text is separated from the footnotes by a horizontal line, and there is a consistent space between the line and the footnotes. The footnote number is aligned with the text line and does not extend above it, with the numbers placed in alignment. References or additional information follow each other in perfect alignment (Al-Sirfi, 2008, p. 368).

A star (*) symbol is used in footnotes to refer to a specific idea or to clarify a term, followed by two asterisks for a second idea or term. This method, referred to as referencing using stars, allows the researcher to provide explanations for terms or ideas in the footnotes section since these clarifications cannot be made within the body of the text.

2.2.2. Objectives of Writing Footnotes:

The purposes of using footnotes can be summarized as follows (Al-Sirfi, 2008, p. 368):

- To provide the reader with the source and verification of facts or information found in the page.
- To serve as a tool to confirm the researcher's work and indicate the originality and quality of the research.
- To acknowledge the rights of other authors and researchers.
- To act as a guide directing the reader to previous studies that discuss the same topic or idea.

2.3.Citation and Reference Methods:

Documentation refers to the process of verifying the sources of information and attributing them to their original authors, ensuring academic integrity and recognizing the contributions and intellectual property of others. Given the importance of citation in scholarly research, various citation methods can be observed in different books and articles published in academic journals. No single method can be universally preferred, but researchers must adhere to a specific citation style throughout their work without switching methods within the same document. It is worth noting that academic journals may require a specific citation style as part of their publishing guidelines, and researchers wishing to publish their work in a particular journal must follow that journal's approved citation method (Al-Najjar et al., 2013, pp. 291–292).

Generally, there are several accepted methods for citing references in academic research, including:

2.3.1. First Method: Using the Endnote/Footnote System

This system relies on (Al-Najjar et al., 2013, pp. 292–293):

- Assigning a sequential number enclosed in parentheses, slightly raised above the normal line, at the end of the paragraph being cited, indicating the reference used by the researcher. This is followed by providing a detailed explanation of the reference in the footnote section at the bottom of the page.
- Providing a detailed explanation of the referenced number at the bottom of the page, including specific details about the reference, with all references listed alphabetically at the end of the research or book.
- Providing sequential numbers without detailed information in the footnotes for each page, but ensuring that detailed information is provided at the end of the chapter or at the conclusion of the book. The references are listed alphabetically at the end of the work.

Examples of footnote citation:

- **Single Author for a Book:**

(1) Ziad Hamdan, Teaching Methods, Dar Al-Wafa, Amman, 1985, p. 130.

- **Two Authors for a Book:**

(1) Naifa Qatami, Abdul Aziz Jaber, Educational Psychology, Dar Al-Ma'arifa, Cairo, 1995, p. 160.

- **Three or More Authors:**

(1) Fayez Jumaa Al-Najjar et al., Scientific Research Methods: An Applied Perspective, Dar Al-Hamid, 3rd ed., Jordan, 2013, p. 293.

When using the footnote system for citation, the following should be noted (Al-Najjar et al., 2013, pp. 293–294):

• When a reference is used consecutively, i.e., twice in succession on the same page, detailed information about the reference should not be repeated in the footnote after the assigned number. Instead, the phrase "the same reference" (or "ibid" in English) is used.

Example:

If a researcher cites the book *Stylistic Readings in Modern Poetry* by Dr. Mohamed Abdul Muttalib twice in succession, the footnote citation will appear as:

(1) Mohamed Abdul Muttalib, *Stylistic Readings in Modern Poetry*, Egyptian General Book Organization, Cairo, 1995, p. 163.

(2) Ibid, p. 180.

• If the same reference is cited again on the same page but not consecutively, i.e., there is a reference between them, detailed information should not be repeated in the footnote. Instead, the full name of the author and the term "previous reference" (or "Op Cit" in English) should be used.

Example:

If a researcher cites *Stylistic Readings in Modern Poetry* by Dr. Mohamed Abdul Muttalib twice, separated by another reference in *Stylistic Trends in Modern Literary Criticism* by Dr. Ibrahim Abdullah Al-Jawad, the footnote citation will appear as follows:

(1) Mohamed Abdul Muttalib, *Stylistic Readings in Modern Poetry*, Egyptian General Book Organization, Cairo, 1995, p. 163.

(2) Ibrahim Abdullah Al-Jawad, *Stylistic Trends in Modern Literary Criticism*, Ministry of Culture Publications, Amman, 1960, p. 195.

(3) Mohamed Abdul Muttalib, *Previous Reference*, p. 180.

In the bibliography or reference list, the citation will appear as: Ibrahim Abdullah Al-Jawad, *Stylistic Trends in Modern Literary Criticism*, Ministry of Culture Publications, Amman, 1960.

Mohamed Abdul Muttalib, *Stylistic Readings in Modern Poetry*, Egyptian General Book Organization, Cairo, 1995.

Note that in the bibliography, the page number is not mentioned as it is already noted in the footnotes, and references are organized alphabetically.

2.3.2. The Second Method: The Harvard System

The Harvard system relies on documenting sources directly within the text after the quoted material, by placing the author's last name followed by the year in parentheses. This system was developed at Harvard University in 1930, and all references used are then arranged alphabetically in a reference list or bibliography (Al-Najjar et al., 2013, pp. 293–294).

An example of in-text citation in Arabic: (Al-Najjar 2007). In English: (Lewis 2001).

2.3.3. The Third Method: The American Psychological Association (APA) System

This system was developed by the American Psychological Association (APA) between 1930-1940, with continuous updates, the most recent being in 2009 and published in 2010 (Al-Najjar et al., 2013, p. 294).

The APA system requires citations directly after the quoted or referenced text, where the author's last name is followed by a comma, then the year, another comma, and the page number, all enclosed in parentheses. All references are then alphabetically arranged in a reference list (Al-Najjar et al., 2013, p. 295).

An example of in-text citation in Arabic: (Al-Najjar, 2007, p. 20). In English: (Lewis, 2001, p. 25).

Note that the page number is included without the need for the Arabic "ص" or the English "p" before the page number.

3. Arrangement of References (General Principles)

The process of arranging and citing references is tied to specific principles that the researcher must follow when documenting and arranging their references. The following are key principles (Asas Kitabat al-Masadir wa al-Maraji' hasab Nizam (APA) al-Duwali, 2023):

- The purpose of documenting references in the reference list is to provide sufficient and specific information about the sources used, enabling other researchers in the field to easily access them.

- In scientific research, the primary sources should be relied upon rather than indexes, abstracts, or summaries. If a secondary source is used, it is the secondary reference that should be cited, not the original.

- The reference list appears at the end of the research paper as an integral part of the document.

- The reference list is divided into two sections: the first for Arabic references and the second for foreign-language references.

- The reference list includes all sources (both Arabic and foreign) used in the body of the paper, without additions or omissions.

- The list includes books, specialized journals, theses, newspapers, websites, and other relevant materials related to the research problem.

- References are arranged alphabetically by the author’s or researcher’s last name, without numbering or hyphens (-). If a reference spans two lines, the second line begins at the same level as the first line but indented by a word's length.

- When a family name begins with the definite article "Al-" (e.g., Al-Shanawi, Al-Kilani), the definite article is ignored. The reference is listed under the first letter of the family name (e.g., "Sh" for Al-Shanawi, and "K" for Al-Kilani).

- The reference list should match the in-text citations in terms of quantity, publication year, and last name.

- Compound family names are treated as a single name when arranging them alphabetically in the list.

- If a reference does not have an author, the title is used in place of the author's name. If there is no publication date, the phrase "no date" should be used instead.

- If a journal issue has multiple issues in one year, the issue number should be enclosed in parentheses immediately after the volume number.

- If the author is "unknown," the reference is placed under the letter "M" in the Arabic section and under "A" in the English section.

- When an author has multiple works, the citations of individual works should precede those of co-authored works.

- In the case of multiple co-authored works by the first author with different authors, the first letter of the second author's last name is considered for the alphabetical arrangement of works.

Chapter Six: Editing Techniques (Punctuation Marks, Citation, Footnotes, Reference Ordering)

References of Chapter Six :

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- *Asas Kitabat al-Masadir wa al-Maraji' hasab Nizam (APA) al-Duwali* [APA Citation and Referencing Rules]. (2023, March 12). *Majallat Jami'at al-Quds al-Maftuha*. Retrieved from www.journals.qou.edu.

Chapter Seven: A Look at Data Processing Methods (Questionnaire, Econometric Models)

This axis will address the methodology for processing data from questionnaires, as well as available quantitative data used in constructing econometric models.

1. Questionnaire Processing

After the researcher completes the initial draft of the questionnaire, it is necessary to ensure the **validity** and **reliability** of the questionnaire before distributing it to the research sample related to the study population.

1.1. Questionnaire Validity

Questionnaire validity refers to the extent to which the questionnaire statements measure what they are designed to measure. The validity of the questionnaire is ensured through face validity (expert review validity), internal consistency of the questionnaire statements, and construct validity of the questionnaire axes.

1.1.1. Face Validity (Expert Review Validity)

Face validity relies on the idea of the appropriateness of the questionnaire statements for what they measure, the target population, and their relevance to the overall questionnaire. From this perspective, the preliminary version of the questionnaire is presented to several experts with relevant experience and specialization to gather their opinions and benefit from their suggestions for modification. This process ensures the appropriateness of each statement for its axis, the linguistic and scientific accuracy of the questionnaire statements, and the comprehensiveness of the questionnaire in addressing the research problem and achieving its objectives. Based on the opinions of the experts, some statements

may be reformulated, or new statements added to improve the research instrument.

Several reasons drive researchers to subject their questionnaire to face validity (expert review validity). These include:

- The researcher's inability to properly formulate the questionnaire questions.
- Neglecting important questions that should be included in the questionnaire.
- Including questions that do not serve the purpose of the questionnaire in any way.

1.1.2. Internal Consistency Validity:

Internal consistency validity refers to the degree to which all questionnaire items are consistent with the axis they belong to. This means that each statement measures what it is intended to measure and does not measure anything else. We test internal consistency validity to determine how well all questionnaire items align with the axis they are associated with.

There are several reasons why a questionnaire might lack internal consistency:

- Poorly worded questions in the questionnaire's axes.
- Respondents' misunderstanding of the questionnaire items.
- One or more questions in the questionnaire axes do not serve the intended objective.

1.1.3. Construct Validity:

Construct validity is one of the measures of the validity of the research tool. It measures the extent to which the objectives the tool aims to achieve are realized. Construct validity indicates the degree of correlation between each axis of the research tool and the total score of all the questionnaire items combined. We test construct validity to determine how well each axis of the research tool correlates with the total score of all the questionnaire items.

1.2. Reliability of the Questionnaire:

The reliability of the questionnaire refers to the consistency of the results it provides when redistributed multiple times under the same conditions and circumstances. In other words, reliability means the stability of the questionnaire's results and their minimal variation if the questionnaire is redistributed to sample members multiple times over specific periods. The reliability of the data collection tool is measured in various ways, one of the most common being the calculation of Cronbach's alpha.

We test the reliability of the questionnaire to determine if it gives the same result when redistributed.

There are several reasons why the questionnaire may be unreliable:

- Poor formulation of the questionnaire's items.
- Lack of understanding of the research terms by the participants in the questionnaire.
- One or more questions in the questionnaire do not serve the intended purpose.

1.3.Validity and Reliability Tests:

1.3.1. Validity Test:

We perform a validity test to determine whether the questionnaire is valid, whether in terms of internal consistency validity or construct validity. We rely on the SPSS software by calculating the correlation coefficient and its significance level. Below is a detailed explanation.

- **Internal Consistency Validity Test:**

As previously mentioned, internal consistency validity refers to how well all items in the questionnaire align with the construct they are meant to measure. In other words, the item should measure what it was intended to measure and not anything else.

Therefore, the internal consistency validity of the questionnaire relates to the individual items within each construct and their relationship with the overall score of that construct. This is translated into numbers by calculating the correlation coefficient between each question of a construct and the total score of that construct. Once we obtain the correlation coefficients, we examine the significance level of each correlation. If we find that all correlation coefficients for the items within the construct have a significant level, we conclude that there is internal consistency, and the questionnaire possesses internal consistency validity. This is done by calculating the correlation coefficients for all the items within their respective constructs.

- **Construct Validity Test:**

As previously explained, construct validity indicates how well each construct of the study tool is related to the total score of all items in the questionnaire.

Therefore, construct validity of the questionnaire is concerned with the relationship between each construct and the overall score of all items in the questionnaire. This is translated into numbers by calculating the correlation coefficient between each construct and the total score of the questionnaire items. Once the correlation coefficients are calculated, we examine the significance level of each correlation. If all correlation coefficients for the constructs have an acceptable significance level, we conclude that the questionnaire possesses construct validity. This is done by calculating the correlation coefficients between each construct and the total score of the questionnaire items.

1.3.2. Reliability Test of the Questionnaire:

We perform a reliability test to determine whether the questionnaire is reliable. We use SPSS software for this purpose, employing various methods, the most common and important of which is the Cronbach's alpha coefficient. When we obtain the Cronbach’s alpha coefficient, we can comment on the reliability of the questionnaire as follows:

- If the value of Cronbach’s alpha is between 0.6 and 1, we can consider the questionnaire as a reliable measurement tool.
- If the value of Cronbach’s alpha is less than 0.6, we can consider the questionnaire as unreliable, due to reasons mentioned earlier.

The reliability test of the questionnaire is done by calculating the reliability coefficient for each construct separately, not for all the items in the questionnaire as a whole.

1.4. Pre-Test for Validity and Reliability:

1.4.1. Pre-Test for Validity:

A pre-test for the validity of the questionnaire involves subjecting the data obtained from the pilot sample to a validity test to determine how consistent the

questions are, and thus their ability to measure the phenomenon they were designed to assess.

The pre-test for validity is conducted after obtaining data from the pilot sample. The pilot sample refers to a small experimental sample taken from the study population, for example, if the study population consists of 50 people, we might select 10 people for the pilot sample. After distributing the questionnaires to the pilot sample, we input the data from these questionnaires into the SPSS program and conduct the validity test for the first time on this data.

- **Pre-Test for Internal Consistency Validity:**

The internal consistency validity test pertains to each construct of the questionnaire, where we examine how well the items of a given construct align with the overall construct. This is done by calculating the total score for each construct using SPSS and then calculating the correlation coefficient for each item within the construct with the total score of that construct. If we find that all items within the construct have a significant correlation with the total score of the construct, we can conclude that internal consistency exists. However, if some items within the construct do not show a significant correlation with the total score, we conclude that there is no internal consistency.

If the questionnaire demonstrates internal consistency validity, we accept it as it is. If internal consistency is not found, we have two options: the first is to remove the questions that do not show a significant correlation, and the second is to revise these questions as there may be a high possibility that the question is negatively worded, unclear, or poorly phrased. It is generally preferred to revise questions rather than remove them during the pre-test for internal consistency validity.

- **Pre-Test for Construct Validity:**

The construct validity test pertains to the relationship between each construct and the overall score of the questionnaire.

To conduct this test, we follow the same steps as before, but this time focusing on the total score of each construct and its relationship with the total score of all constructs in the questionnaire. The total score for each construct is calculated by averaging the items within that construct.

If we find statistically significant correlation coefficients at acceptable significance levels, we conclude that the questionnaire demonstrates construct validity, and therefore, the constructs of the questionnaire are consistent with one another.

1.4.2. Pre-Test for Reliability of the Questionnaire:

The pre-test for the reliability of the questionnaire refers to the test conducted to determine whether the questionnaire distributed to the pilot sample is reliable or not, and thus whether the results of the study are stable or unstable. This test helps assess the consistency of the results over time or when the questionnaire is re-administered.

1.5. Post-Test for Validity and Reliability:

The post-test for validity and reliability refers to the process of re-testing both internal consistency validity, construct validity, and reliability of the questionnaire after collecting the results from the study sample. This allows for verification of the stability and consistency of the instrument after its actual use.

1.5.1. Post-Test for Validity:

The post-test for validity involves subjecting the data collected from the study sample to a validity test to assess the consistency of the questionnaire's items and their ability to measure the intended phenomenon.

After collecting the completed questionnaires from the study sample, we input the data into SPSS and conduct the validity test again. This includes both the internal consistency validity test and the construct validity test.

- **Post-Test for Internal Consistency Validity:**

The post-test for internal consistency validity follows the same steps as the pre-test for internal consistency. However, at this stage, we remove any items that do not align well with the total score of the construct. The items to be removed are those whose correlation coefficients do not show statistical significance.

- **Post-Test for Construct Validity:**

In this post-test, we follow the same procedure as the pre-test for construct validity. If we find that a construct's correlation is not statistically significant, we remove that construct.

1.5.2. Post-Test for Reliability:

The post-test for reliability follows the same steps as the pre-test. If the value of Cronbach's alpha is found to be less than 0.6, we remove the items that, when deleted, increase the Cronbach's alpha value. This process helps improve the reliability of the questionnaire.

2. Statistical Processing of Questionnaire Data

To achieve the study objectives and analyze the data collected by the researcher using the questionnaire, various appropriate statistical methods are employed through the **Statistical Package for the Social Sciences (SPSS)**.

Chapter Seven: A Look at Data Processing Methods (Questionnaire, Econometric Models)

Below are some of the key statistical techniques frequently used in processing questionnaire data using SPSS:

- **Data Coding and Input into SPSS**: Data is coded and entered into the SPSS software using a computer. Then, the length of cells for the five-point Likert scale (minimum and maximum values) used in the questionnaire is determined. For instance, in the case of a five-point scale:
    - The range is calculated as 444 (i.e., 5−1=45 - 1 = 45−1=4).
    - The cell length is determined by dividing the range by the number of scale points: 4/5=0.84 / 5 = 0.84/5=0.8.
    - This value is added to the lowest scale value (111) to determine the upper limit of each cell. This results in the following cell ranges:
        - If the mean agreement score for any statement (or weighted average for the axis) ranges from **1 to 1.8**, it indicates **very low agreement**.
        - If it ranges from **1.81 to 2.6**, it indicates **low agreement**.
        - If it ranges from **2.61 to 3.4**, it indicates **moderate agreement**.
        - If it ranges from **3.41 to 4.2**, it indicates **high agreement**.
        - If it ranges from **4.21 to 5**, it indicates **very high agreement**.
- **Frequency and Percentage Calculations**: Frequencies and percentages are calculated to identify the personal characteristics of the study sample and determine their responses to the questionnaire statements.
- **Pearson Correlation Coefficient**: The Pearson correlation coefficient is calculated between the score for each statement and the overall score for the axis it belongs to, to assess whether the questionnaire demonstrates internal consistency validity.

- **Cronbach's Alpha Coefficient**: Cronbach's alpha is used to measure the reliability of the study instrument.

- **Chi-square Test (χ2\chi^2χ2)**: The chi-square test is applied to determine whether the opinions of the study sample align with those of the study population.

- **Arithmetic Mean Calculation**: The arithmetic mean is used to measure the level of agreement or disagreement of respondents on each statement of the questionnaire axes. It also helps rank statements based on the highest mean score.

- **Weighted Mean Calculation**: The weighted mean is computed to assess the level of agreement or disagreement on the main axes (mean of means for the statements). This aids in ranking the axes based on the highest weighted mean score.

- **Standard Deviation**: The standard deviation is calculated to measure the degree of dispersion of responses for each statement and each main axis from their mean values.

    - If the standard deviation is less than 1, it indicates a concentration of responses.

    - If it equals or exceeds 1, it indicates a dispersion of responses.

    - The standard deviation is useful for ranking statements based on the mean, favoring those with the least dispersion when the weighted mean is equal.

- **One-Sample T-Test**: This test is used to examine hypotheses related to the presence of quality in higher education at the university center.

- **Independent Samples T-Test**: This test is employed to identify differences in the opinions of study participants on various axes based on their personal characteristics with two levels.

- **One-Way ANOVA (Analysis of Variance)**: ANOVA is used to identify statistically significant differences ($p \leq 0.05$p \leq 0.05$p \leq 0.05$) in the views of study participants on the axes of the study, based on personal characteristics with more than two levels.

- **Scheffé Test**: This test is applied to pinpoint statistically significant differences for any category of personal variables among the study sample in their responses to the primary study variables. It is used only when ANOVA indicates the presence of significant differences. If no significant differences are found, this test is unnecessary.

- **Simple or Multiple Linear Regression**: Linear regression is used to estimate the impact of the independent variable(s) on the dependent variable.

3. Handling Econometric Model Data

Econometrics has gained significant importance as a fundamental tool to quantify theoretical economic assumptions by providing numerical estimates that align with reality, making them more logical and acceptable. This field seeks to integrate economic theory, mathematical methods, and statistical techniques to derive quantitative estimates useful for decision-making and forecasting. This is achieved by testing economic hypotheses and determining quantitative relationships between economic variables that explain the behavior of the studied phenomenon.

3.1. Model Specification:

The **specification stage** is one of the most crucial phases in developing an economic model. During this stage, the relationship between dependent and independent variables within the economic model is identified based on economic theory.

Chapter Seven: A Look at Data Processing Methods (Questionnaire, Econometric Models)

Model specification requires defining the phenomenon to be explained and identifying the factors that can help elucidate its behavior. The econometric researcher examines the relationships between different variables and expresses these relationships in mathematical form, referred to as model specification. This process relies on economic theory and all available information about the phenomenon under study. Thus, the econometric researcher must have a solid understanding of general economic theory and the specific phenomenon being studied.

The process of model specification includes Anani, 2009, p. 19-20):

- Identifying the dependent variable and the independent variables to be included in the model.

- Determining theoretical expectations for the signs of function parameters, which will form the basis for evaluating the estimates obtained for the model's parameters.

- Defining the mathematical structure of the model regarding its variables and equations, whether linear or nonlinear.

- Transforming the mathematical model into a statistical model by incorporating the random variable. This accounts for explanatory variables omitted from the equation, which affect the dependent variable or the non-systematic component of economic behavior.

In this study, we will apply the steps outlined above to specify the model and construct an economic model.

3.1.1. Identifying Model Variables and Theoretical Expectations:

Selecting variables that influence the studied phenomenon relies primarily on economic theory and secondarily on prior studies.

For clarification, we selected an example from a study by a researcher analyzing the impact of interest rates on capital flows to Algeria and Egypt (an econometric study). Based on the theoretical framework discussed in the first chapter of the research, which focuses on factors influencing foreign investment behavior (both direct and portfolio investments), the researcher identified eight explanatory variables for direct foreign investment behavior and six for indirect foreign investment behavior. This limited selection of variables, despite the abundance of explanatory factors, was due to several reasons, including the unavailability of statistical data for some variables, the short observation period for the study, and the difficulty of measuring certain qualitative variables.

3.1.2. Defining the Model Equation:

To formulate the model in its final measurable form, two steps must be followed:

- **Step 1: Mathematical Model Formulation**

After identifying independent and dependent variables, the functional form can be expressed as follows (based on the previously mentioned researcher's model):

FDIGDP1=f(CPSGDP,ER,GDPPC,GEGDP,GGDP,IF,IR,RP)FDIGDP1 =

f(CPSGDP, ER, GDPPC, GEGDP, GGDP, IF, IR, RP)FDIGDP1= f(CPSGDP,ER,GDPPC,GEGDP,GGDP,IF,IR,RP)

Where:

FDIGDP1: Net foreign direct investment flows as a percentage of GDP.

CPSGDP: Domestic credit to the private sector as a percentage of GDP.

ER: Exchange rate of the Egyptian pound against the US dollar.

GDPPC: GDP per capita.

GEGDP: Government final consumption expenditure as a percentage of GDP.

GGDP: GDP growth rate.

IF: Inflation rate in the Egyptian economy.

IR: Lending interest rate in the Egyptian economy.

RP: Rural population as a percentage of total population.

- **Step 2: Statistical Model Formulation**

To make the model measurable, it is expressed in statistical form by adding the random error term (εi\varepsilon_iεi):

FDIGDP1=α+β1CPSGDP+β2ER+⋯+β8RP+εiFDIGDP1 = \alpha + \beta_1 CPSGDP + \beta_2 ER + \dots + \beta_8 RP + \varepsilon_iFDIGDP1=α+β1 CPSGDP+β2ER+⋯+β8RP+εi

Where:

- α\alphaα: Constant term representing the value of the dependent variable when all independent variables are zero.
- β1,…,β8\beta_1, \dots, \beta_8β1,…,β8: Parameters of the explanatory variables.

3.2. Estimating Model Parameters:

After specifying the phenomenon under study and converting the model from mathematical to statistical form, the next step is estimating the model's parameters using an appropriate estimation method. This phase requires familiarity with econometric methods and the assumptions underlying each method. The process involves the following (Anani, 2009, p. 25-27):

3.2.1. Collecting Data on Model Variables:

Researchers often encounter difficulties in obtaining suitable data for estimating model parameters. Available data may need adjustments or corrections to align with the model's requirements. For example, some data may be available in nominal terms when real terms are needed. Additionally, data availability might be limited for short periods, requiring parameter estimation using relatively short time series, which may affect the relationship's stability and the quality of the estimates.

Moreover, researchers must ensure there is no strong correlation between explanatory variables or that one is derived from another, as this can lead to an inability to obtain parameter estimates or misinterpret results. This issue is known as **multicollinearity**.

The two primary types of data used for estimating statistical models are **time series data** and **cross-sectional data**. Researchers should be aware of the challenges associated with each type in estimating, interpreting, and forecasting the studied phenomenon.

3.2.2. Selecting the Appropriate Estimation Method:

Researchers must understand the various methods for estimating statistical model parameters, the assumptions underlying each method, and the economic significance of the estimated parameters.

A thorough knowledge of estimation methods is critical for obtaining reliable estimates. Econometric model parameters can be estimated using two main categories of methods (Anani, 2009, p. 27-28):

- **Single Equation Estimation Methods:** Used to estimate parameters of a single equation. Key methods include:

- Ordinary Least Squares (OLS)
- Indirect Least Squares (ILS)
- Two-Stage Least Squares (2SLS)
- Limited Information Maximum Likelihood (LIML)

• **Simultaneous Equation Estimation Methods:** Used to estimate parameters of a system of simultaneous equations. Key methods include:

- Three-Stage Least Squares (3SLS)
- Full Information Maximum Likelihood (FIML)

3.3. Evaluation of Model Estimates

After estimating the model parameters using the appropriate standard estimation method, the third stage of econometric research involves evaluating these estimates. This means the researcher must determine, based on specific criteria, whether these estimates are acceptable and reliable.

The criteria used to evaluate and estimate the parameters of the statistical model are divided into three main categories:

3.3.1. Economic Criteria:

These criteria are defined by economic theory and focus on the signs and values of the parameters of economic variables. According to this criterion, the signs and values of the estimated parameters are compared to determine whether they align with the logic of economic theory. Based on this, the relationship between the independent variables and the dependent variable is established.

- The estimated parameter signs are expected to conform to economic theory. If some estimates display signs contrary to what is dictated by the theory, they should be rejected for being inconsistent unless there is a strong justification.

- If the estimate with a conflicting sign is rejected, the researcher should reconsider the model's structure, including the variables involved or additional relationships that could be incorporated.

- Errors in estimation are often attributed to data issues, and it is essential to verify whether the assumptions of the estimation method have been met. Deviations from expected signs may also arise from the violation of one or more of these assumptions.

3.3.2. Statistical Criteria:

These criteria are defined by statistical theory and aim to evaluate the obtained estimates of the model parameters and assess the confidence level of these estimates.

Key statistical measures include (Anani, 2009, p. 31-32):

- **Coefficient of Determination (R^2):**

  - R^2, calculated from sample data, represents the proportion of total variation in the dependent variable explained by the explanatory variables. It reflects the explanatory power of the model.

  - The adjusted R^2 is preferred over R^2 as it provides a more accurate measure.

  - Generally, a higher R^2 indicates a stronger explanatory relationship. However, a high R^2 does not always mean a truly strong relationship, as it could result from a high correlation among explanatory variables.

Conversely, a low R^2 may not necessarily indicate a weak relationship and might result from non-linearity between variables.

- Increasing R^2 by adding more explanatory variables is possible, but it should not compromise the model's quality. Careful interpretation of R^2 is essential, as relying solely on this measure can be misleading. Even if R^2 is high, the model might be limited if many parameter estimates are insignificant.

- **T-Test:**

This test examines the significance of the estimated parameters of economic variables in the model. If the calculated ttt-value exceeds the tabulated ttt-value, the estimated parameter is considered significant, indicating a substantial relationship between the independent and dependent variables.

- **F-Test (Fisher Test):**

This test evaluates the overall significance of the model. If the calculated FFF-value exceeds the tabulated FFF-value, the model as a whole is deemed significant.

- **Correlation Coefficient (r):**

- Correlation measures the relationship between two or more variables. The degree of correlation is measured by the correlation coefficient (rrr), which ranges between -1-1-1 and $+1$+1+1.

- A positive rrr indicates a direct relationship, while a negative rrr indicates an inverse relationship.

In summary, statistical criteria clarify the ability of the estimated parameters to pass statistical tests.

- **C. Econometric Criteria:**

These criteria include essential diagnostic tests such as:

- **Durbin-Watson (D.W.) Test:** This test identifies the presence or absence of autocorrelation between the values of the random error term.

- **White Test:** This test detects the presence or absence of multicollinearity among explanatory variables (Amouri & Mnaijid al-Dulaimi, 1988, p. 94).

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Chapter Eight: Guidelines for Presenting the Thesis on Defense Day

This section outlines the key points that students must adhere to when preparing their thesis presentation file for defense day.

1. Components of the Thesis Presentation File

The first part of the presentation file encompasses the major components of the introduction. These elements are as follows:

- **Introduction (Premise):**

The researcher briefly discusses their study, providing a general overview of the problem to be addressed, whether comprehensively or partially.

- **Research Problem:**

This section elaborates on the specific aspect of the broader problem under investigation. For instance, it may address a particular type of unemployment within a community. The researcher presents the sub-problem concisely in paragraph form.

- **Main Research Question:**

The main research question is a direct, interrogative reflection of the research problem. It transforms the problem into a primary question that guides the study and must be answered within the thesis.

- **Sub-Questions:**

Sub-questions break down the main research question into manageable components. Addressing these smaller questions systematically enables the researcher to construct a comprehensive answer to the primary research question.

- **Hypotheses:**

Here, the researcher provides preliminary answers to the sub-questions. These

answers, described as provisional, will either be confirmed or refuted through the course of the study.

- **Methodology:**

This section outlines the methods employed in the research, such as deductive, inductive, or mixed approaches, depending on the requirements of the study.

- **Study Objectives:**

The researcher specifies the goals the study seeks to achieve, highlighting its intended contributions.

- **Significance of the Study:**

This section emphasizes the societal benefits of the research. It discusses the potential positive impacts of the study's findings and their applicability across various sectors.

- **Study Boundaries:**

The researcher delineates the scope of the study in three dimensions:

- **Spatial Boundaries:** The geographical location(s) of the research.
- **Temporal Boundaries:** The time frame during which the research was conducted.
- **Topical Boundaries:** The thematic focus of the study.

- **Structure of the Study:**

This section briefly describes the organization of the study across its chapters. Each chapter's content, objectives, and general findings are summarized, providing an overview of the thesis structure.

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2. Presentation Components During the Defense

The second part focuses on the core elements to be addressed during the defense presentation. These include:

- **Introduction (Prologue):**

The researcher provides a summary of the key points covered in the thesis chapters, offering a concise review of their research journey.

- **Research Findings:**

This section presents the study's findings, ideally categorized into theoretical and practical (field-based) results for clarity.

- **Testing Hypotheses:**

The researcher revisits the hypotheses proposed in the introduction, verifying their validity or disproving them based on the study's results.

- **Recommendations:**

Practical recommendations stemming from the study are proposed. These suggestions aim to address the research problem or improve specific aspects related to the study's scope. Recommendations should be actionable and solution-oriented.

- **Future Research Directions:**

The researcher suggests potential areas for future investigation related to the study's topic. These recommendations may focus on aspects not explored in the current research due to time constraints or resource limitations. Suggested topics should ideally be framed as independent studies.

3. Additional Notes for an Effective Presentation

- **Use Visual Aids:** Incorporate graphs, charts, and slides to visually represent key findings and make the presentation more engaging.

Chapter Eight: Guidelines for Presenting the Thesis on Defense Day

- **Time Management:** Allocate appropriate time for each section, ensuring a balanced and comprehensive presentation.
- **Anticipate Questions:** Prepare to address potential queries from the evaluation committee by having a deep understanding of all aspects of your research.
- **Practice Delivery:** Rehearse the presentation to ensure clarity, confidence, and fluency in delivering your content.
- **Professionalism:** Dress appropriately and maintain a formal tone throughout the presentation.

By adhering to these guidelines, students can ensure that their thesis presentation is comprehensive, impactful, and aligned with academic standards.

Conclusion

Conclusion:

After reviewing the diverse concepts of scientific research and the various stages and steps that a researcher must follow to prepare any study, it is essential to emphasize the importance of adhering to a systematic and methodical approach. Following well-structured and organized steps during your research process ensures accurate and reliable results. These results can serve as a foundation for providing appropriate and effective solutions to the problem under study.

Conversely, neglecting the essential and orderly steps of scientific research may lead to inaccurate and false outcomes. Such outcomes not only fail to address the problem but could exacerbate it, much like a doctor prescribing an incorrect treatment, which worsens the patient's condition instead of improving it.

Moreover, dear student, I urge you to uphold the highest standards of academic integrity. The most critical quality for any researcher is to avoid plagiarism. Ensure that you give proper credit to the original authors and researchers whose ideas you incorporate into your work. Academic honesty not only reflects your credibility but also strengthens the validity and trustworthiness of your research.

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