



**People's Democratic Republic of Algeria**  
**Ministry of Higher Education and Scientific Research**  
**Abdelhamid Ibn Badis University – Mostaganem**  
**Faculty of Social Sciences**  
**Department of Human Sciences**  
**Field of Information and Communication Sciences.**

**Course Title:**

**Methodology Forum**

➤ *Dr. REGAD Halima.*

- *Second-Year Master's Students.*
- *Organizational Communication.*

**Academic Year : 2025-2026.**



كلية العلوم الاجتماعية

المجلس العلمي

الرقم: 618/م.ع.ك.ع.ا/ 2025

مستغانم في: 2025/11/30

## مستخرج من محضر المجلس العلمي

اجتمع المجلس العلمي لكلية العلوم الاجتماعية بجامعة عبد الحميد بن باديس - مستغانم في دورته العادية يوم الخميس 27 نوفمبر 2025، وكان من بين النقاط المدرجة ضمن جدول أعماله طلبات المصادقة على المطبوعات البيداغوجية المرفقة بتقارير الخبرة.

وبناء على تقارير الخبرة الايجابية للأستاذين:

أ.د. صفاح أمال فاطمة الزهراء (أستاذة التعليم العالي)، الموقع من قبلها بتاريخ: 2025/11/22.

أ.د. محراز سعاد (أستاذة التعليم العالي)، الموقع من قبلها بتاريخ: 2025/11/24.

وافق أعضاء المجلس العلمي بالإجماع على قبول المطبوعة البيداغوجية للأستاذة "رقاد حلیمة" بعنوان "Methodology Forum" المقرر ضمن المواد المدرسة لمستوى السنة الثانية ماستر اتصال تنظيمي للسنة الجامعية 2024-2025.

رئيس المجلس العلمي



أ.د. عمارة الناصرية  
رئيس المجلس العلمي

## **Pedagogical Handout(مطبوعة بيداغوجية)**

**Course Title: Methodology Forum**

**Dr. REGAD Halima**

**Level:** Master's Degree

**Duration:** 12–14 weeks (1 semester)

**Specialization:** Organizational Communication

**Target Group:** Second-Year Master's Students

**Credits:** 4

**Coefficient:** 2

**Course Type:** Lecture + TD

**Category:** Methodological Teaching Unit (Semester-Based)

### **- Course Description.**

This course provides second-year master's students with a comprehensive introduction to the principles and stages of scientific research. It begins by defining scientific research and highlighting the essential criteria for selecting a relevant and feasible research topic. Emphasis is placed on identifying a clear research problem and assessing the suitability of the topic for academic study.

The program then addresses the formulation of research questions and sub-questions, as well as hypotheses, including their types and the conditions required for proper formulation. It also introduces the conceptual framework of research by explaining key elements such as variables, concepts, indicators, and dimensions.

Students are trained in reviewing previous studies using a systematic and methodological approach. The course covers sampling techniques and types, along with the main data collection tools, including questionnaires, interviews, and observation.

After requiring knowledge about data collection, students will move to explore data analysis methods, distinguishing between quantitative and qualitative approaches. In addition, they will discuss the importance of building a solid theoretical background to support the research study.

Finally, the course emphasizes research ethics, highlighting principles such as academic integrity, objectivity, respect for participants, and proper citation practices, which are essential for conducting responsible and credible scientific research.

- **Educational Objectives.**

The aim of this forum is to provide students with the opportunity to present their research projects. The forum serves as a platform for discussion and exchange with both peers and the instructor leading the session.

By the end of the course, students should be able to:

✦ Master the fundamentals of research methodology in the social sciences and humanities.

✦ Select appropriate research topics in the field of organizational communication.

✦ Formulate a research problem that adheres to the established scientific standards of the discipline.

✦ Conduct and organize research in a sequential manner.

✦ Produce a final, defensible dissertation.

- **Required Knowledge**

1. Prior knowledge of scientific research methodology.
2. Ability to distinguish between quantitative and qualitative research approaches.

- **Years Taught:** Since 2020

## Course Structure: Lectures & Objectives

<b>Week</b>	<b>Lecture Topic</b>	<b>Specific Objectives</b>
1	Introduction to Scientific Research	Define research; understand its purpose in academic inquiry.
2	Criteria for Selecting a Good Research Topic..	Enable students to distinguish between broad, vague topics and clearly defined research problems
3	Specifications for determining the suitability of a topic for study.	Understand stages of research: topic selection, importance, objectives.
4	Formulating the research problem	Formulate research problems and write good research questions.
5	Formulating research Sub-questions in scientific research.	Mastering the method of breaking down the main question into sub-questions that can be answered later in the field.
6	Hypotheses: Types and Conditions for Their Formulation.	Understanding the importance of hypotheses, and the situations in which we can omit them in research.
7	Conceptual Framework: Variables, Concepts, Indicators, and Dimensions.	Construct frameworks to guide research logic and variables.
8	The Methodology of Reviewing Previous Studies.	Learn how to find, evaluate, and synthesize academic sources.
9	sampling techniques and types	Understand sampling methods and their implications for validity.
10	Data Collection Tools: Interviews, questionnaires, Observation	Choose tools based on research type; design instruments.
11	Data Analysis: Quantitative Methods	Understand statistical analysis basics: descriptive and inferential.
12	Data Analysis: Qualitative Methods	Apply coding, thematic analysis, and interpretation in qualitative data.
13	The Theoretical Background in Scientific Research .	Explain why theories are essential in designing scientific studies.
14	Ethics in Research	Ensure quality and integrity of research; respect ethical principles

## **General Introduction**

Scientific research methodology is key to preparing academic research. It is the method that contributes to discovering scientific facts that have long required explanation, especially in the humanities and social sciences, where most results are relative and imprecise, unlike in the physical sciences. Scientific research methodologies, across different research fields, have developed and diversified to varying degrees, both quantitatively and qualitatively. However, they all strive to develop specialized social knowledge and find solutions to existing or anticipated problems that challenge individuals, social groups, or nations on multiple levels, across time and place.

The scientific research methodology in the field of media and communication studies helps specialists in this field to interpret the phenomena that shape social reality, revealing the various short-term and long-term effects that some media content in traditional and virtual mass communication channels may have on the behavior of individuals or social groups, including those occurring within the institutional environment.

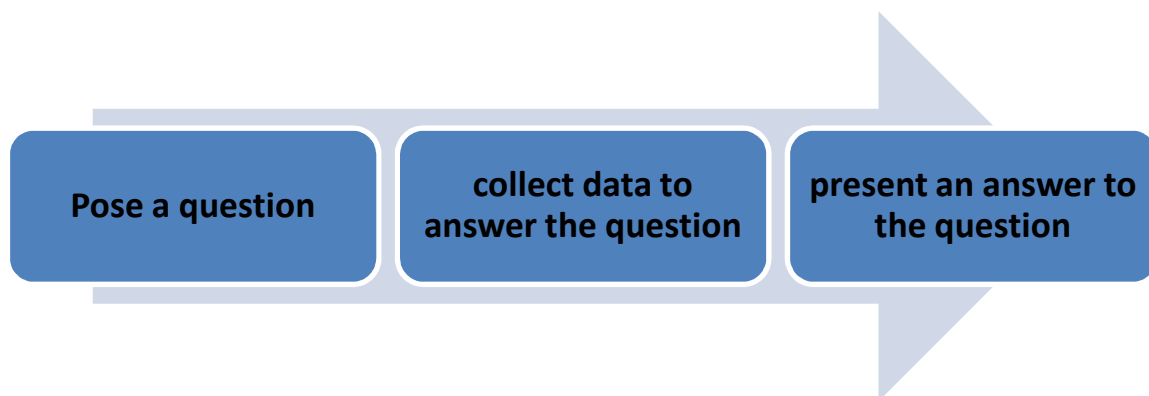
This pedagogical support was created to support university students at all levels, specifically second-year Master's students in Organizational Communication. It enables students preparing research projects or dissertations to be systematic in their thinking, work, and relationship with the university environment they interact with, avoiding superficiality and the reuse of common methodological errors found in previous studies. This enables them to prepare research papers and write their reports and studies objectively. This publication is an attempt to benefit from and learn through teaching this subject at the university level for several years.

## ***01-Introduction to Scientific Research***

Scientific research is a source of strength for the development and progress of nations, leading to innovation and improved quality of life by addressing problems and finding solutions. Scientific research is a source of strength for the development and progress of nations, leading to innovation and improved quality of life by addressing problems and finding solutions.

### **1- Meaning Of Research.**

Research is a process to discover new knowledge to find answers to a question. The word research has two parts re (again) and search (find) which denote that we are taking up an activity to look into an aspect once again or we want to look for some new information about something. Research is a process of steps used to collect and analyze information to increase our understanding of a topic or issue. It consists of three steps: Pose a question, collect data to answer the question, and present an answer to the question



However, regardless of its origin, all research begins with a question about a specific phenomenon. For example: Why does the public choose to engage with one brand over another? What gratifications will the public derive from it? What types of messages resonate with the public? What types of advertising are most

effective in selling specific types of products? Each of these questions can be answered to some extent by a well-designed research study. The difficulty, in many cases, lies in determining the type of study, or the method of data collection, that is most appropriate for answering the specific question(s)

According to (Rocco, 2011), "Research is a careful investigation or inquiry especially through search for new facts in any branch of knowledge." Research is a movement, a movement from the known to the unknown

We can say that the main goal of scientific research is to provide solutions to problems in the field of business and various sciences. It also helps to increase the researcher's knowledge and expertise in his field of specialization. There are also other goals of research, including description, explanation, prediction, control and regulation of a problem, as well as increasing the human ability to adapt to the surrounding environment.

## **2- Characteristics of Scientific Research:**

Scientific research is characterized by a set of features that distinguish it from other similar concepts such as knowledge, customs, arts, etc. Among these features are:

- Scientific research relies on research methods and scientific tools that were created specifically to help it verify the hypotheses and results obtained. Therefore, it is characterized by organization and not randomness.
- The reproducibility and generalizability of results, also known as reliability, means the possibility of obtaining almost identical results again by following the same scientific methodology, procedures, and steps under the same conditions. This allows the results to be generalized to similar cases of the phenomenon under study.

- Scientific research is interpretive research because it is concerned with explaining phenomena and things by means of a sequential and interconnected set of concepts called theories.
- Scientific research is organized and controlled because it is based on the scientific methodology in its narrow and broad sense, which makes scientific research reliable in its steps and results.
- Searching for causes: This is an important factor in understanding the phenomena under study. Knowing the causes has theoretical and practical goals, and these are in themselves the goals of science. The phenomena are understood by knowing the causes and factors of emergence and development, with the aim of controlling, influencing, increasing or decreasing them, and thus controlling the phenomenon and subjecting it to experimentation, modification and development.

Scientific research, in all its diverse forms, helps those conducting it to learn how to use the rules and methodologies of scientific inquiry, and to become familiar with the principles of scientific practice, objectivity, and methodology in addressing numerous issues and finding solutions to many problems in a neutral and objective manner.

### **3- Types of scientific research :**

Research varies according to its scientific, social, artistic, cultural, technological, and other fields.

#### ***A- According to the methods used:***

##### **1. Descriptive Research:**

This type of research focuses on describing a set of phenomena or events related to the study, gathering information and facts about them, providing a

detailed description of all the circumstances surrounding the phenomenon, and preparing a comprehensive report on its actual state.

## **2. Historical Research:**

This type of research involves studying, describing, and recording all events and occurrences that happened and ended in the past. It analyzes and interprets these events to arrive at general ideas that help in understanding current events.

## **3. Experimental Research:**

This type of research involves investigating existing problems and phenomena based on the scientific method, which relies on observation, formulating basic hypotheses, and conducting precise experiments to verify the validity of the hypotheses.

### **B- Research is divided according to its nature into:**

#### **1- Theoretical Research:**

This type of research is conducted by the researcher to satisfy their need for knowledge and expand it, or to clarify an ambiguity surrounding a phenomenon, without considering the application of the results in the scientific field.

#### **2- Applied Research:**

This type of research is conducted by the researcher to find a solution to an existing problem or to address a specific situation. Applied research encompasses several types, the most important of which are:

##### **2-1 Evaluative Research:**

This type of scientific research involves selecting the best decision from a set of alternatives. Evaluative research is a systematic process of collecting and analyzing information to inform decision-making and includes evaluation (Ubaidat et al.1999).

## **2-2 Evaluative Research:**

This type of research aims to measure and judge the effectiveness of scientific activities and propose various opinions and solutions to enhance, evaluate, and improve them. The results of this type of research depend on the specific circumstances of the study.

## **2-3 Developmental Research:**

The purpose of this type of scientific research is not to examine theory but to develop effective outputs for use in schools or institutions. This research includes tools for developing teacher training and educational tools, developing media, or administrative systems, among others.

These tools are developed to meet specific needs. After completion, they are examined and evaluated for a certain level of effectiveness (Al-Ghazawi, 2008).

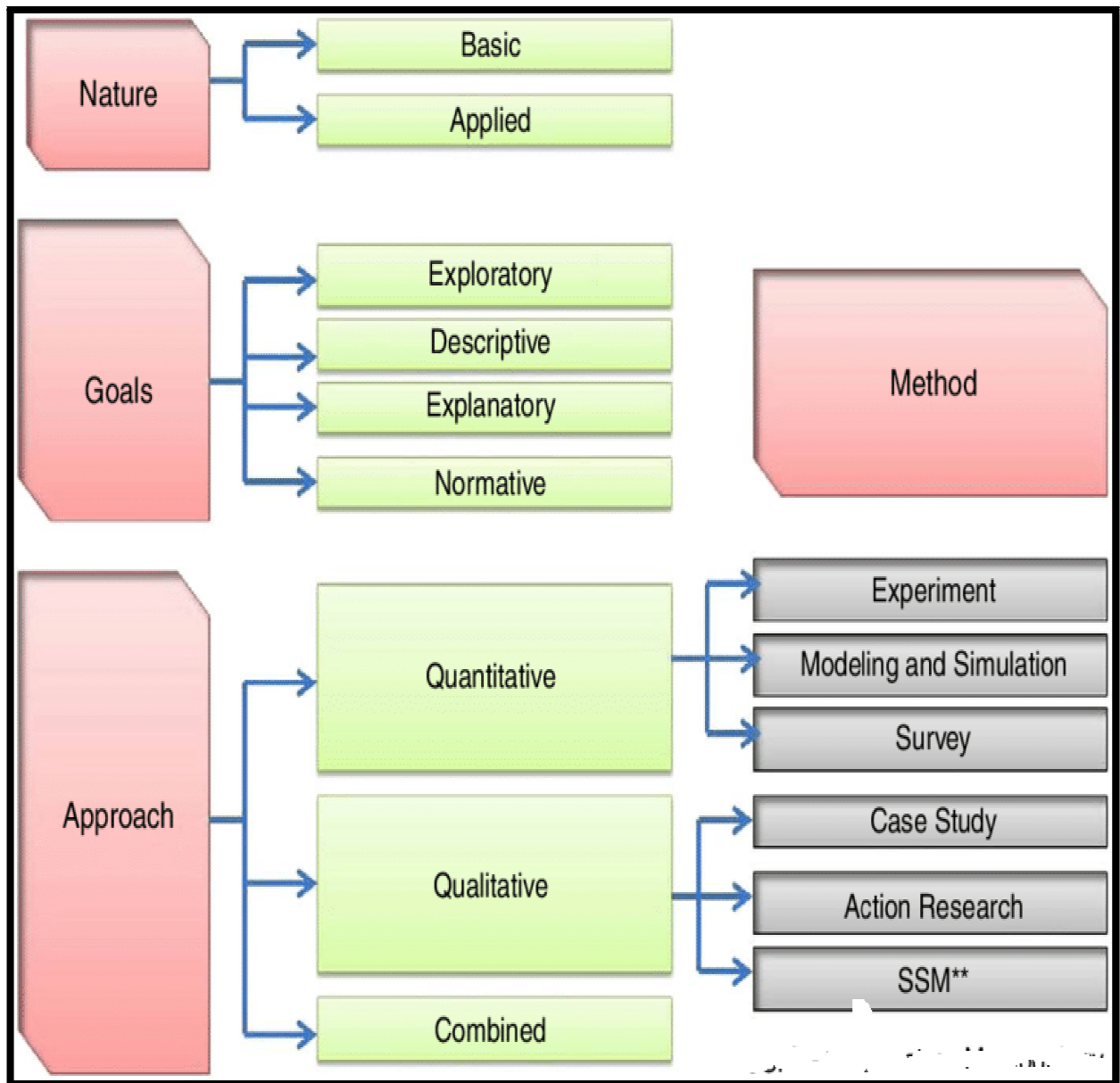
## **2-4 Qualitative Research:**

This type of research does not rely on statistical or quantitative methods to reach conclusions. Instead, it employs research methods based on studying and analyzing natural phenomena without relying on pre-established hypotheses.

## **2-5 Quantitative Research:**

This type of research relies on quantitative measurement tools to collect data about a specific phenomenon. It is applied to a sample of the study population. Unlike qualitative research, the collected data is processed using statistical methods to enable researchers to arrive at scientific results that can be easily generalized to the study population as a whole.

Despite the differences in the types, forms, and nature of scientific research, it is of great importance in developing the human mind and providing it with many new pieces of knowledge in different fields.



**Figure:** Types of Scientific Research.

**Source:** (Alves et al. 2015)

### 3- The difference between the scientific method and scientific research:

In light of the above, the scientific method and scientific research are intertwined and interdependent. They can be distinguished by understanding that scientific research represents the method used to obtain accurate, reliable, and precise knowledge. The method for obtaining this knowledge is by following the scientific method, which is the standard approach that connects hypotheses and theories. Any research conducted exclusively using scientific methods (the scientific method) is simply another name for collecting and analyzing information and arriving at conclusions. In other words, research is the natural way of thinking and solving problems, but it is more organized. This table illustrates the difference between them in a simplified manner:

Comparison Points	Scientific Method	Scientific Research
<b>Definition</b>	It is a systematic process involving steps like defining questions, forming hypotheses, conducting experiments, and analyzing data.	It refers to systematic methods and strategies.
<b>Nature</b>	It involves a question and suggested explanation (hypothesis) based on observation, followed by the careful design	Can be repeated many times using the same methods and tools.
<b>Data collection</b>	Experiments, direct observation, measurements	Data is collected using several techniques to test hypothesis.

<b>Main Components</b>	Observation, problem identification, hypothesis, experimentation, analysis, conclusion	Topic selection, literature review, methodology, data
The goal	To explain scientific progress	To discover new knowledge.

## 02- Criteria for Selecting a Good Research Topic.

Reaching the point of identifying a topic that is suitable for study is not an easy task, especially for students preparing to complete their theses or graduation dissertations. This is due to their adherence to a strict timeline, which can sometimes stifle their creativity and perseverance. As a result, some of them tend to ask for topics and issues to be addressed from the academic community. This often reduces the students' attachment to their subject on one hand, and limits their scientific enthusiasm on the other, leading them to lose motivation during the research process.

The topic lies in something you genuinely want to understand more deeply—a question you seek to answer. The most important inquiry a researcher should begin with is: **How can I choose a good scientific problem?** It must adhere to a set of methodological rules and standards(Alon,2009).

Topics can arise from a variety of sources, such as lectures, seminars, and other scientific events that involve interaction among researchers from diverse academic backgrounds. They may also stem from an experiment conducted by the researcher that raised new questions—especially in fields involving laboratory experiments—or from articles published in scientific journals, or even from newspapers and non-academic magazines(BEAUD,1986).

A topic represents a general concept or broad area of interest and serves as a conceptual framework for study. For example, the topic of organizational communication encompasses subjects such as formal and informal communication within the organization, job performance, internal and external communication, organizational image management strategies, internal audience incentive systems, crisis management, and so on. In contrast, a research topic is

a specific subfield within the main topic, focusing on a particular and precisely defined aspect. It is a specific question that the researcher wishes to explore. For example, in the field of organizational communication, a research topic could be the impact of using digital platforms on communication between an organization and its external audiences.

We can provide a classification—though not exhaustive—of the main sources related to choosing a research problem as follows:

### **1. Previous Researches and Literature**

The interconnection of knowledge has created a complementary relationship between different studies and research efforts. A researcher may start from the questions and inquiries concluded by previous studies. Exploring past literature also helps in identifying topics that have already been overused, enabling the researcher to exclude them and instead pursue new and unexplored ideas.

### **2. Current Issues**

A researcher does not exist in isolation from daily events and social dynamics. This generates a perspective to examine the implications of their field on society or the institutions that constitute the social structure. Therefore, research should pay attention to shedding light on phenomena related to the socio-cultural and political context in which the researcher lives. It is not always the researcher's duty to find solutions (Angers,1997 ). Particularly in the social sciences, the goal is primarily to understand phenomena and present the relationships and variables that govern them.

### **3. Clarification of Contradictory Research Results**

Constant exposure to research and studies across books and references of different types and languages generates a critical mindset in the researcher. This

leads to scientific doubt regarding the extent to which findings reflect reality. It motivates the researcher to re-examine these "truths" using new tools, theories, and in different contexts that may result in differing outcomes. Hence, a researcher must remain in continual exposure to knowledge to offer meaningful scientific contributions.

#### **4. Personal Interest**

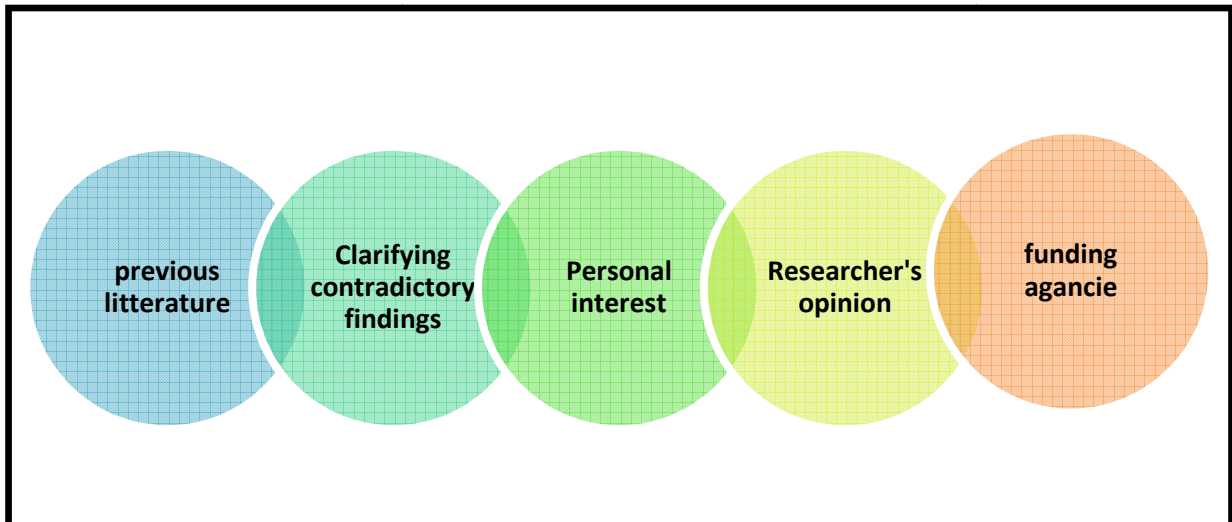
This factor can be categorized under subjective sources for choosing a research problem. Here, the researcher is personally interested in the topic without any objective external motivation. Their own inclinations define the scope from which they choose their topics. This interest may stem from satisfaction or dissatisfaction with certain ideas or ambiguous events they have encountered and wish to clarify using a systematic scientific approach.

#### **5. Opinions of Specialists and Academicians**

Scientific problems may also originate from interactions between researchers at various academic forums—seminars, study days, and conferences—where ideas and perspectives are exchanged. This is especially true when engaging with experienced scholars who possess strong academic, methodological, and practical backgrounds.

#### **6. Funding Agencies**

Sometimes, researchers are tasked with solving specific scientific problems proposed by funding agencies, whether these are governmental or private institutions (Angers,2004).



**Figure 02: Summary of key sources of inspiration for selecting a research topic.**

For an initial question to be effective, it must possess certain characteristics:

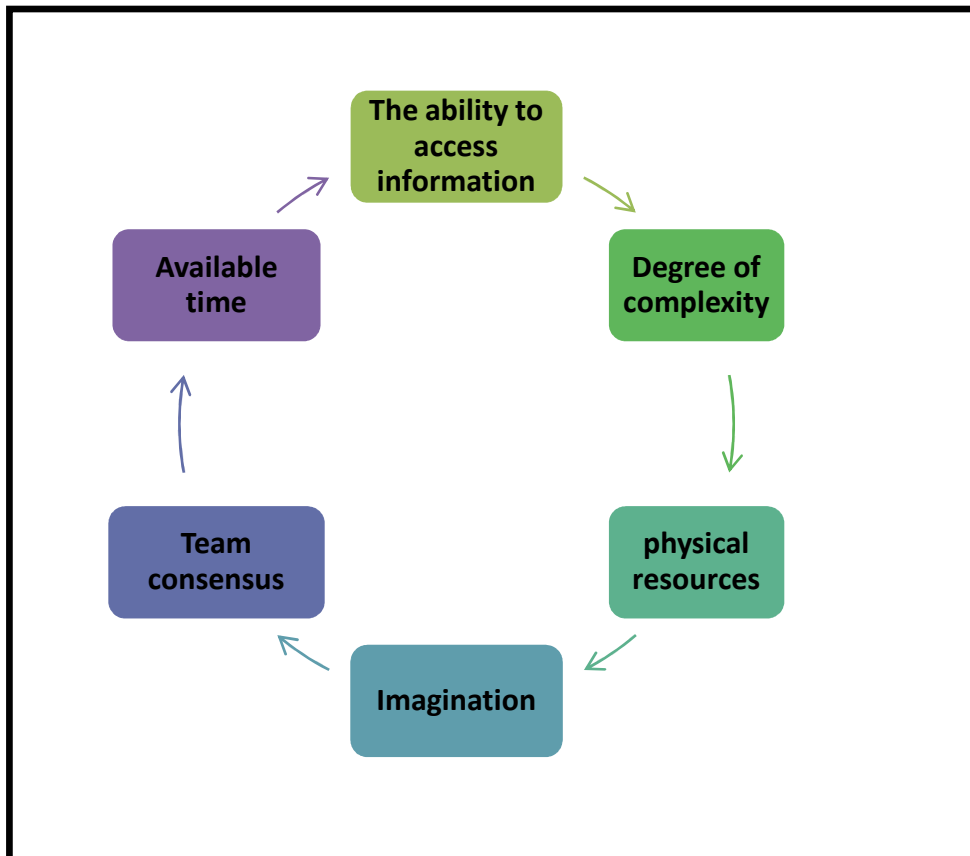
- ❖ **Precise:** Worded clearly, without ambiguity.
- ❖ **Concise:** Expressed succinctly, without excessive length or abbreviation.
- ❖ **Unambiguous:** Avoid complex formulations or those open to multiple interpretations.
- ❖ **Realistic:** Appropriate to available resources, whether material, financial, or technical.

Choosing a scientific research topic is a crucial task, as André Ouellet points out: “All authors unanimously agree that the choice of topic is of paramount importance. In research, the secret to success often lies in selecting a good question, a good research topic (Angers, 1996)

In conclusion, choosing a research topic, particularly in the field of communication, requires rigorous and systematic reflection. Mastering the art of topic selection is essential for conducting high-quality research. A relevant topic allows researchers to identify gaps in the literature and produce valuable studies that offer innovative solutions to current communication challenges within organization.

### 03-Specifications for determining the suitability of a topic for study.

Given the multitude of sources a researcher may encounter, and in order to define a suitable scientific problem, the researcher can identify and write down the various problems raised regarding the starting point, and then choose one that meets the criteria outlined in the following figure according to Maurice Angers, especially if the study falls within the realm of social research:



**Figure:** *Specifications for the suitability of the topic for study according to Maurice Angers.*

It is clear from the figure above that the feasibility of the subject for study is governed by conditions related to a set of possibilities, the most important of

which is the compatibility of the subject under study with the period, or the time deadlines specified for its presentation in its final form, taking into account the material possibilities available to determine its completion, and access to sources and data that would benefit the researcher in the stages of completing his research on the theoretical and methodological aspects, up to its field aspect.

In this context, Dr. Fodil Daliou adds a set of scientific considerations that fall under the conditions for the suitability of a subject for study, which the researcher must ascertain when he first senses a particular problem for study so as not to fall into a state of inadequacy later on (Daliou, 2012). We summarize them as follows:

### **1. Respect for Specialization:**

Researchers do not have absolute freedom in choosing their research problems. Rather, their ideas must remain within their field of specialization, as this involves a set of methodological tools, theoretical frameworks, and conceptual structures that are specific to one scientific field and not another.

### **2. The Social Meaning of Research:**

The selection of topics and problems by researchers and scholars must stem from the pressing needs related to the situations individuals and societies face, and the complexity of social conditions. Otherwise, research will become a meaningless pursuit of topics and a mere intellectual exercise with no tangible social benefit. Therefore, the goal of research should be to understand the conditions of society without exacerbating social crises related to intolerance, extremism, or racism, for example. Instead, it must be rooted in social reality, as every society has its own circumstances and priorities.

### **3- Availability of references on the topic and access to information sources:**

The availability of books and sources on the research topic reduces the likelihood of researcher frustration, which can hinder progress in the study. Since possessing information is linked to possessing power, the researcher's ability to access sources provides motivation and continuity. Therefore, this point must be ensured before embarking on the procedural aspects of the research to avoid paralysis later, especially for novice researchers.

#### **4- Novelty and originality in defining the problem:**

The topic chosen by the student should open a new field of research and possess originality. This does not necessarily mean creating new topics, but rather that current problems may differ from previous ones in terms of perspectives and tools for addressing them. The researcher should ask themselves: What is the scientific contribution to the field of study and the specialization?

Determining the suitability of a topic for study requires the researcher to carefully evaluate the proposed issue against specific criteria. These criteria ensure that the topic is relevant, researchable, clearly defined, and scientifically meaningful—especially within the context of social research. By applying these specifications, the researcher can confidently select a topic that aligns with scholarly standards and contributes effectively to the field (Al saati, 1982). Moreover, assessing a topic through these criteria helps the researcher avoid vague, overly broad, or impractical research directions. It also provides a structured framework for refining the research problem, ensuring that the study remains feasible in terms of time, resources, data availability, and methodological clarity. Ultimately, this process strengthens the overall quality and credibility of the research work.

## 4-Formulating The Research Problem

The research problem is the cornerstone and foundation of scientific research. It takes the form of a set of questions that come to the researcher's mind, either due to a flaw, deficiency, ambiguity, or lack of clarity in a particular issue that the researcher wishes to clarify. The problem is formulated as a question or issue.

A problem, in this sense, is a complex, ambiguous, or unclear matter—such as a “political problem,” which refers to an issue requiring resolution and treatment.

In scientific research, the research problem is the central subject of the study. According to Al-Qadi (1404 AH), it is "anything that needs solving and clarification through results," or it can be defined as a question that arises in the researcher's mind about an ambiguous topic that needs explanation. A researcher may begin with a specific question, and as they interpret or solve it, the problem becomes clearer. Once the researcher succeeds in explaining the relationship between the variables presented from the outset—especially in terms of cause and effect—they are considered to have resolved the problem within its defined framework.

Thus, the research problem is considered the **core** and **axis** of the study. Its precise formulation is a critical step, as it justifies the scientific and epistemological purpose of the research, clarifies its methodological dimensions, and outlines its conceptual framework and the potential outcomes the researcher aims to achieve.

At this point, it is essential to distinguish between the "**problem**" and the "**problematic**" in scientific research. The term *problematic* (*ishkāliyya*), as defined in *Al-Ma‘ānī Al-Jāmi‘ Dictionary*, refers to a set of intellectual, cultural,

or social questions characterized by ambiguity and complexity that require deep thinking and reflection in order to find a solution (Al-Wasīṭ, 2004). According to Le Petit Robert Dictionary, it is described as "the art or science of posing problems" ("l'art, la science de poser les problèmes" (Deliou, Gharbi, 2012) It is not something that can be reduced to a single element or a few variables but rather encompasses all the dynamic elements of a phenomenon in motion, not in stasis. For J. Berrebeh, "the problem is the guiding thread of the argument which allows us to induce in the corrector (or listener), the feeling of a convincing argumentative logic in a determined and clearly delimited field of reflection" (2013:4). At this stage, every researcher must ask themselves: "Why is this research necessary and will I contribute new elements to science and practice?".

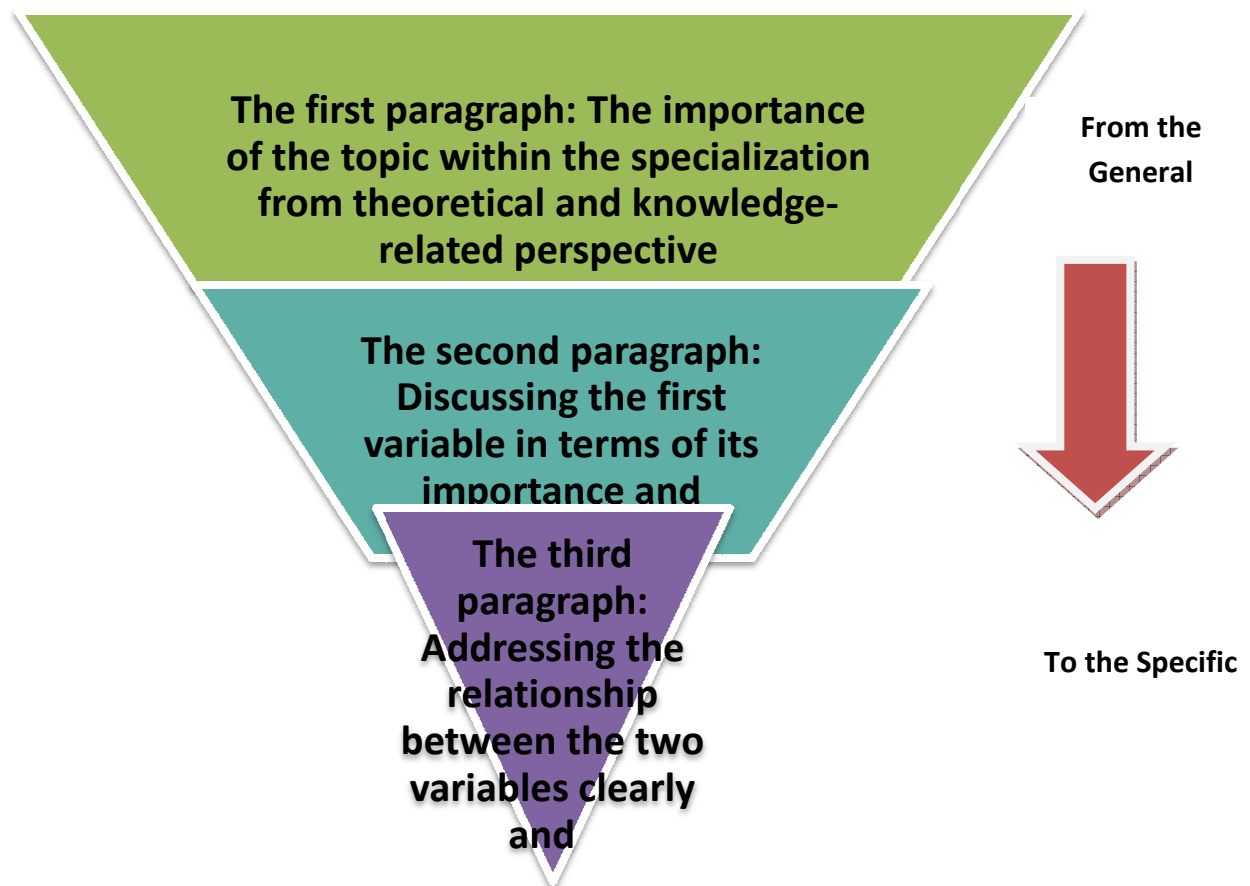
Accordingly, a **problem** is the specific issue or question that the hypothesis addresses, or the phenomenon that requires interpretation—emerging from the researcher's awareness of a difficulty that must be overcome to achieve a certain goal. The **problematic**, on the other hand, is the **theoretical framing** of the research issue. It stems from a deeper concern with a broader scientific question. It is important that the researcher does not settle on a single answer to a research problematic, as the conclusions reached after posing the issue often remain open to skepticism—they may be confirmed, refuted, or partially both—unlike the research problem, which requires a convincing answer that clarifies the reality under study.

To build a strong and coherent research problematic, **Kerlinger** suggests considering three key aspects:

1. The problem should clearly define the relationship between two or more variables.
2. It should be formulated in a precise, clear, and grammatically sound interrogative statement.

3. It must be empirically testable(Kerlinger,1986).

To avoid formulation errors, especially among students, it is advisable to base the problematic on the research title, which typically involves at least two variables: one independent and the other dependent (Qassem, 2017). The problematic may be composed—metaphorically—of **three logically connected paragraphs**, where each paragraph addresses a set of related ideas and smoothly transitions to the next, all while maintaining a scientific tone. This tone should avoid literary or journalistic styles, thereby preventing biased judgments that could compromise the objectivity of the researcher and their critical distance from the subject—particularly in sociological studies.



**Figure 01: Demonstrates how the research problem is constructed by following a sequential presentation of the relationships between the variables.**

The initial question is a precise inquiry that constitutes a starting point for the researcher, and a point of return (after a certain journey) to that same point. Its aim is to define the scope of the research to prevent the researcher from wasting time and energy, as Raymond Quivy and Luc Van Campenhoudt explain below: “[...] state your research project in the form of a starting question” by which the researcher attempts to express as precisely as possible what they seek to know, to elucidate, to better understand (Van, Quivy. 1995) .

- **Common Mistakes in Formulating the Research Problem:**

Formulating the research problem is among the most important steps in scientific research. Through it, the researcher explains the most important aspects of the problem with its various dimensions and multiple indicators. However, this is often lacking in scientific research, especially among beginners. They consider it a theoretical construct without a foundation, relying instead on various scientific references. Thus, the problem becomes a collection of verbatim quotations, completely devoid of the researcher's own voice.

While relying on various references in formulating the research problem is not inherently wrong, the personal theoretical framework built around the initial questions should not be reduced to a mere compilation of quotations from different sources. Such references can be used when necessary, but it is better to avoid them altogether if possible.

These common mistakes in formulating the research problem stem from several reasons, including the researcher's lack of familiarity with existing literature on the topic. They then formulate the problem directly without understanding its various aspects, whether those already written or even conducting field research. Field research provides an understanding of the research topic within its social context, bringing the problem down from the abstract realm to the tangible, observable world.

Therefore, when choosing a research topic, the researcher must then read various references related to that topic, especially previous studies that clarify the subject matter further. This allows the idea to mature in the researcher's mind, providing them with a wealth of knowledge and a solid foundation for formulating the research problem.

Another common mistake in writing the research problem statement is the researcher's failure to define their operational concepts. These concepts form the basis of the research because they guide its direction. The structure or function of a concept, according to its operational definition, is the starting point for both the research questions and hypotheses, and thus extends to the design and construction of data collection tools. Therefore, before formulating the research problem statement, the researcher must define their operational concepts.

## 05-Formulating Sub-questions in Scientific Research.

The research process requires the researcher to move from abstract general questions to concrete ones by breaking them down into sub-questions that relate to behaviors, thus approaching the reality we want to study. Additionally, proposing a hypothesis, a preliminary and intelligent guess, helps the researcher to develop a general framework for their research.

### 1- The Concept and Objectives of Sub-Questions:

A sub-question is a question with no known answer, formulated from the main research question. The researcher poses it to indicate the expected results. These sub-questions clarify the correlation between variables and point to the study's findings, aiming to link the main question to a specific theme. Sub-questions are often used in descriptive studies(Khidir,2013). This stage, which involves breaking down the main research question into sub-questions, aims to:

- Identify the main points and themes the researcher intends to study.
- Highlight the aspects and causal relationships the researcher seeks to resolve.
- Establish a logical connection between these sub-questions and the stated research objectives.

### 2- Formulating Questions:

The questions posed may vary in their wording, but they all share the common form of an interrogative question. They are structured based on the content of each topic. For example, if the topic is social media and academic achievement, these questions might appear as sub-questions such as:

- "What is the impact of social media platforms on academic achievement?"
- "What are the most important social media platforms used for studying?"

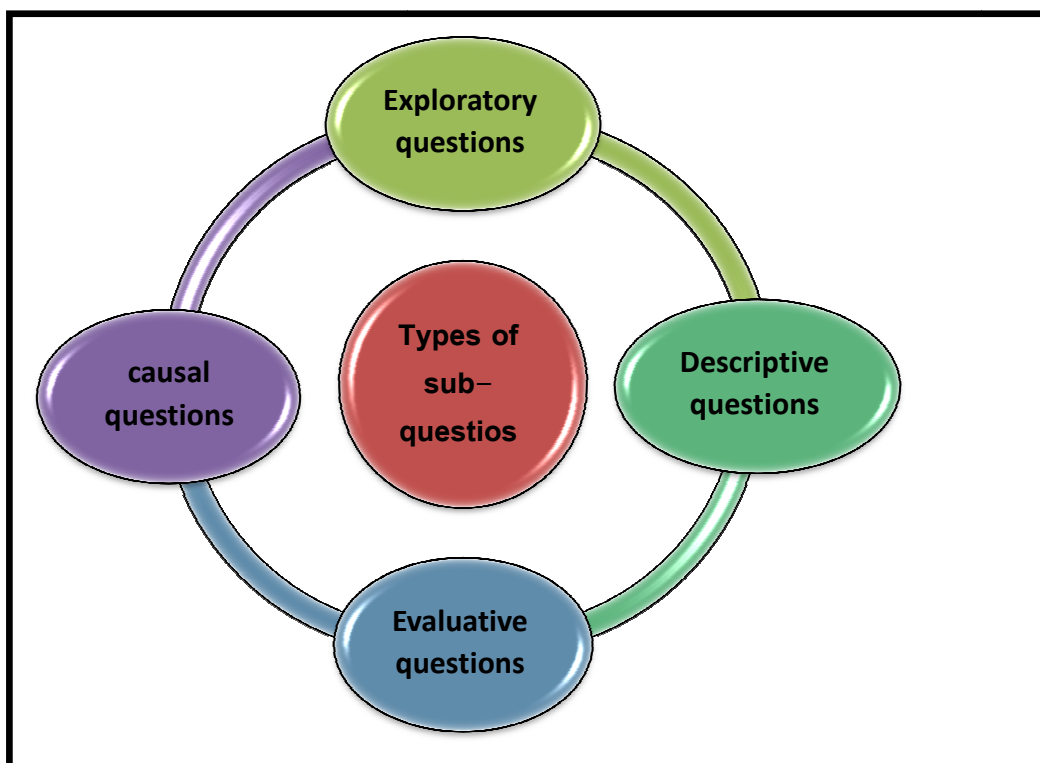
The questions also vary depending on the study model, and can take several forms, including(Gharbi,2009) :

**a) Exploratory questions:** These are commonly found in exploratory studies and research and are formulated as: What? What is it?

**b) Descriptive questions:** Answering these requires a precise description of the phenomenon under study, and generally answers the question: How?

**c) Explanatory or causal questions:** These explain the reasons for the occurrence of the phenomenon, or its type, especially in experimental research that tests causal hypotheses. They are formulated as: Why? or What is the effect of variable (A) on variable (B)?

**d) Evaluative questions:** These are related to studies based on the objective of evaluation or measuring variables related to the subject of the study. They can be formulated as: To what extent...? or To what degree...?



**Figure:** Illustrates the types of sub-questions in scientific research.

We can say that sub-questions are a breakdown of the central problem question, not multiple problems added to the main one. The problem is broken down into questions specific to each variable. For example, a researcher might pose two questions about the independent variable, two about the dependent variable, and one or two about the institution under study. The questions about the independent variable are usually answered in the first chapter, the questions about the dependent variable in the second chapter, and the questions about the institution in the third chapter. Ultimately, answering all the sub-questions will necessarily lead the researcher to the answer to the central problem.

## **06- Hypotheses: Types and Conditions for Their Formulation.**

Formulating hypotheses is a fundamental step in the scientific research process. A well-constructed hypothesis not only guides the researcher in defining the direction of the study but also provides a basis for selecting appropriate methods, identifying variables, and interpreting results. Understanding the different types of hypotheses and the conditions necessary for their proper formulation allows researchers to build coherent, testable, and scientifically meaningful assumptions. This section explores the nature of hypotheses, their main classifications, and the key criteria that ensure their clarity, validity, and relevance within various research contexts

### **1- The Concept of a Hypothesis and its Characteristics:**

Maurice Angers views a hypothesis as a statement predicting a relationship between two or more elements, involving empirical investigation. The majority consider it a conjecture linking causes to effects to offer tentative solutions that must be tested. It is thus a scientific intuition, often taking the form of generalizations, making it one of the most important pillars of the scientific method (Maatouk,1985). Its characteristics include:

a- Statement: It consists of statements declaring the relationship between variables.

b- Prediction: It offers probabilities of answers that are confirmed or refuted throughout the research process.

c- A Means of Verification: This refers to empirical verification, a characteristic based on testing the relationships formulated in reality using the steps of the scientific method(Ben marsli,2007). Claude Bernard states in this context that

the researcher, while formulating a hypothesis, must master the art of dialogue. At this stage, the researcher attempts to compel the subject to answer the hypothesis. If experimentation confirms it, it becomes a law; otherwise, it is not considered a derivation of answers from nature.

## **2- Types of Hypotheses:**

a- Research Hypotheses: These arise from observation and are of two types:

**1- Directional:** These classify the direct relationship between variables. For example: The more the family relationship is based on dialogue, the more positively this will be reflected in the child's behavior.

**2- Non-directional:** This is a hypothesis that does not confirm the nature of the relationship between variables. For example: There is a relationship between communication strategy and the organization's image among the public. In other words, the hypothesis does not clarify the specific nature of the trends in this relationship (Angers, 1997).

Example 2: There is a relationship between public relations activities and crisis management within the organization.

**B- Statistical Hypothesis:** Used to confirm causal relationships between variables, which are easily tested statistically in the form of a null hypothesis or an alternative hypothesis (Al-Rubaie,2015):

**1- Null Hypothesis:** Represents a negative relationship between variables.

**2- Alternative Hypothesis:** An alternative to the null hypothesis, it expresses a positive relationship between variables.

As for its formulation, we can include the following patterns:

**1- Differential Hypothesis:** Formed by comparing two cases:

*Example 1:* The student who reads achieves higher results compared to the student who does not read.

*Example 2:* The satisfaction of an employee who is involved in decision-making is higher compared to an employee who is not involved in decision-making.

**2- Implicit Conditional Statement:** This is a hypothesis that requires one variable to be present in order for another variable to exist.

*Example 1:* If advanced technologies are used in the production process, the organization's standing will improve compared to its competitors.

*Example 2:* Implementing an open communication policy will improve the organization's image among its audience.

**3- Sources for Formulating Hypotheses:** Hypotheses in research are typically derived from multiple sources that provide a theoretical and empirical foundation. One primary source is the existing literature, including prior studies, reviews, and meta-analyses, which help identify gaps, patterns, and relationships worth investigating. Another source is theoretical frameworks, which offer concepts and models that guide the formulation of testable propositions. Practical observations and real-world problems also inspire hypotheses, especially in applied research where solutions to specific issues are sought. Additionally, expert opinions and preliminary data can inform hypotheses by highlighting trends or potential causal links. Finally, logical reasoning and deductive inference from known facts can generate hypotheses that are both plausible and empirically testable (Creswell & Creswell, 2018; Babbie, 2021).

- The researcher's experience in the field of knowledge and their readings of previous literature related to the study topic.

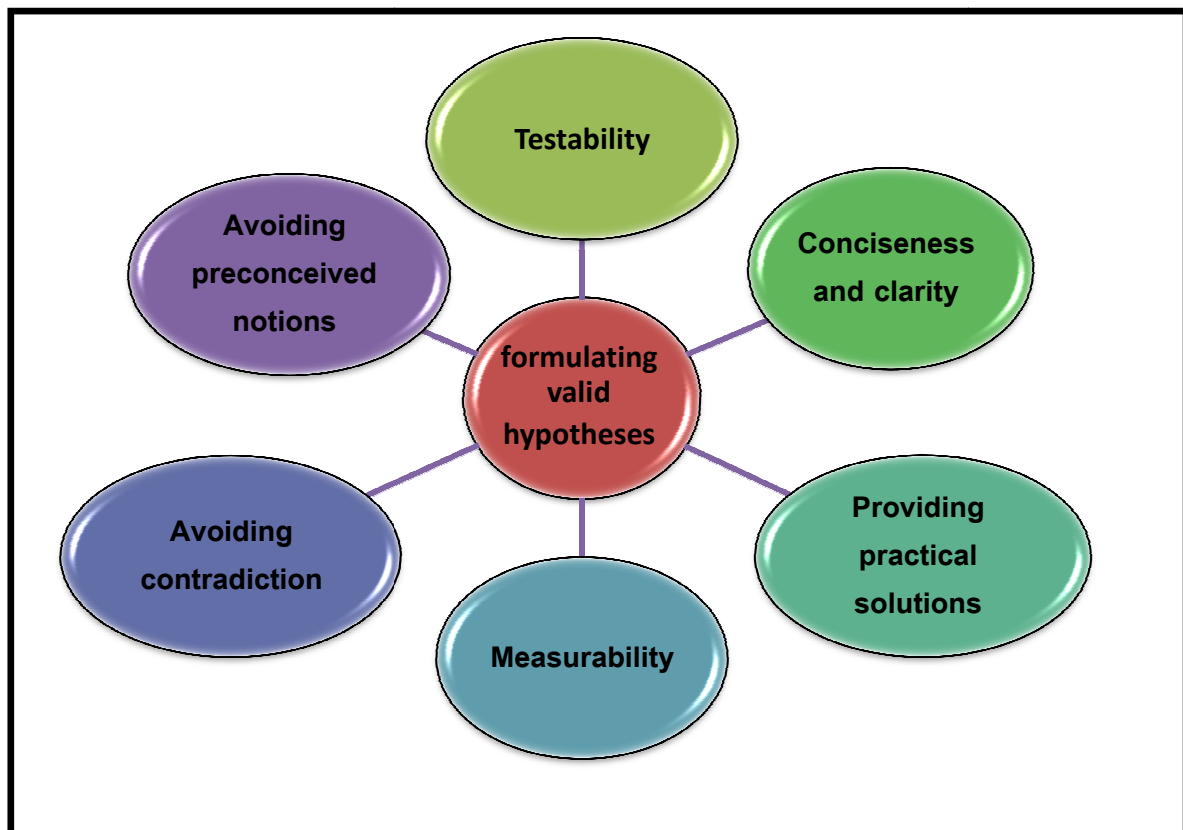
- The researcher's imagination and ability to logically connect ideas based on observation and previous experience.

- The researcher's surrounding social environment.
- The researcher's scientific intuition and creative abilities

#### **4- Conditions for formulating hypotheses:**

A valid hypothesis must meet several essential conditions to be scientifically meaningful and testable. First, it should be clear and precise, leaving no ambiguity about the concepts or relationships involved. Second, it must be testable, meaning that empirical observation or experimentation can verify or falsify it. Additionally, a valid hypothesis should be specific, identifying clearly the variables and their expected relationship, and consistent with existing knowledge, aligning with established theories or evidence unless there is strong justification for a novel approach. It must also be relevant to the research problem, contributing to understanding the phenomenon under study, and possess predictive power, allowing researchers to anticipate outcomes under defined conditions. Finally, simplicity or parsimony is preferred, as hypotheses that explain phenomena with fewer assumptions are generally more robust and practical (Creswell & Creswell, 2018; Babbie, 2021).

There are a number of conditions and controls that must be considered in order for hypotheses to be based on sound foundations. We will try to summarize them in the following figure:



**The diagram summarizes the conditions for formulating valid hypotheses.**

### **5-Methodological Approaches to Verifying the Validity of Hypotheses**

John Stuart Mill divided the methods for verifying the validity of hypotheses into three approaches:

#### **1. Method of Agreement:**

This method is based on the idea that if many cases are associated with a particular phenomenon, and there is one constant factor present in all cases while the other factors vary, we may conclude that this constant factor is the cause of the phenomenon.

A criticism of this method is that the factor the researcher believes to be the true cause may in fact be present merely by coincidence. It is also possible that the

result is due to another factor not identified by the researcher, or that the causal factor produced the result in combination with another unknown factor. Therefore, in reality, it is difficult to isolate a single cause and claim that it is definitively the determining cause (Radwan, 2008, p. 107) .

## **2. Method of Difference:**

This method is based on the idea that if two sets of events are identical in all respects except for one factor, and the outcome differs accordingly, then there is a causal relationship between that factor and the resulting phenomenon. For example, if we have a set composed of elements (F, L, M, N) that produces a certain phenomenon, and another set (F, L, M, A), and this difference leads to a different outcome, then there is a causal relationship between (N and A). As another illustration, if a researcher gathers two groups of people and exposes the first group to a number of factors, resulting in a specific outcome, and then deprives the second group of the influence of one factor so that the outcome does not appear, it can be concluded that the omitted factor is the cause. A criticism of this method is the difficulty for the researcher to identify all variables influencing the overall situation before starting the study. It is also difficult to find two groups that are equivalent in all factors and differ only in one factor, due to the large number of variables that affect human aspects. (Ibid., p. 115)

## **3. Method of Concomitant Variation:**

This means that if there are two series of phenomena involving antecedents and outcomes, and a change in the antecedents in both series leads to a corresponding change in the outcomes in both series, and in a specific proportion, then there must be a causal relationship between the antecedents and the outcomes.

One drawback of this method is that the relationship between variables may be non-causal. Moreover, all factors must be held constant in all cases examined by the researcher except for one variable (Ibid., p. 116).

## 07- Conceptual Framework: Variables, Concepts, Indicators, and Dimensions.

Any research requires a clear title that includes the concepts driving the phenomenon under study. The researcher, in their methodological journey, identifies variables, concepts, indicators, and dimensions to decipher meanings and implications, moving from the abstract to the concrete.

**1- Variables:** Every topic has its own variables, which are generally divided into independent, dependent, and mediating variables. We will attempt to explain the differences between each:

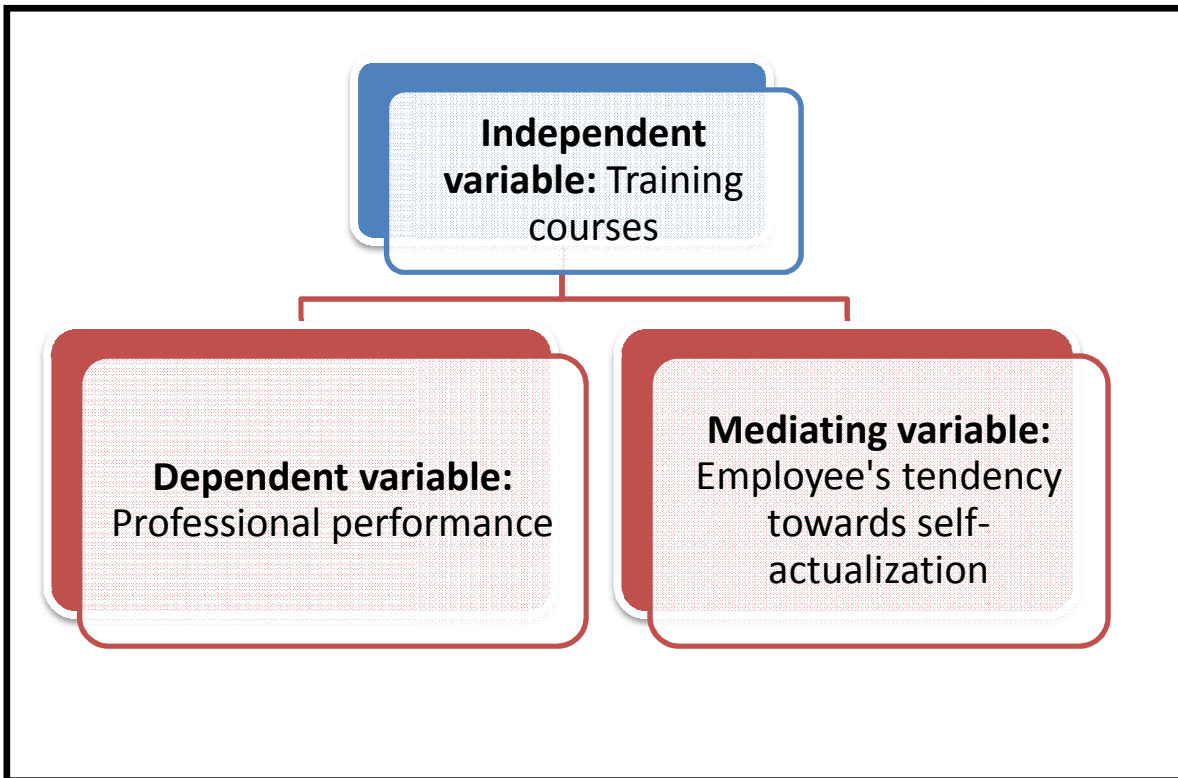
**a- Independent Variable:** This is considered the cause and is sometimes referred to as the causal variable.

**b- Dependent Variable:** This is the variable that the researcher seeks to explain as a result of the causal variable through scientific evidence based on arguments and empirical verification.

**c- Mediating Variables:** These are the variables that act as intermediaries between the independent and dependent variables. In other words, the researcher changes this variable to determine its effect on the cause-and-effect relationship (Angers ,2004).

The classification of these variables depends on the researcher's study and its objectives; therefore, independent variables may become dependent variables for another researcher, or they may remain the same.

**Example:** The relationship between training courses and the activation of professional performance within the organization.



## 2- Concepts:

States (1961) defines a concept as "a familiar verbal term, always formed on the basis of a category of interesting and problematic subjects made up of similar elements." Concepts are verbal linguistic constructs that contribute to the construction of variables, hypotheses, generalizations, and scientific theories that explain or interpret phenomena. They thus clarify the mental image formed through direct observation in the field of research.

The step of defining concepts in research requires providing definitions at three levels:

### A. Linguistic Definition:

This refers to the meaning derived from the root of the word and its derivations according to dictionaries, lexicons, and encyclopedias.

### B. Technical Definition:

This refers to the meaning agreed upon by scholars of a particular field or discipline for that word. This level of definition is subject to criticism due to the lack of consensus among thinkers, especially in the social sciences.

### **C. Operational Definition:**

This refers to a definition that clarifies the concept through a series of procedures stemming from the researcher's perspective and the angles they have chosen to address the phenomenon according to pre-established objectives. The operational definition also explains the tangible aspects of the concept and its characteristics, which can be revealed through measurement or calibration.

*Example:* The use of social media by public relations professionals in a service organization.

**Linguistic Definition:** The verb *to use* forms:

- *Used him:* employed or took him as a servant.
- *Used it in his house:* took it as a maid or servant without compensation.
- *Used a new machine:* operated or utilized it.

### **Terminological Definition:**

According to Yves-François Le Coadic, use is a social activity that becomes ordinary in society through repetition and longevity (Le coadic, 1994). When usage becomes frequent and integrates into an individual's practices and habits, it can then be considered "use."

### **-Operational Definition:**

The manner in which public relations personnel in service-oriented institutions interact with social media platforms, by seeking to understand their patterns and

habits of exposure to these platforms, and describing the effects of this interaction on their performance of public relations activities.

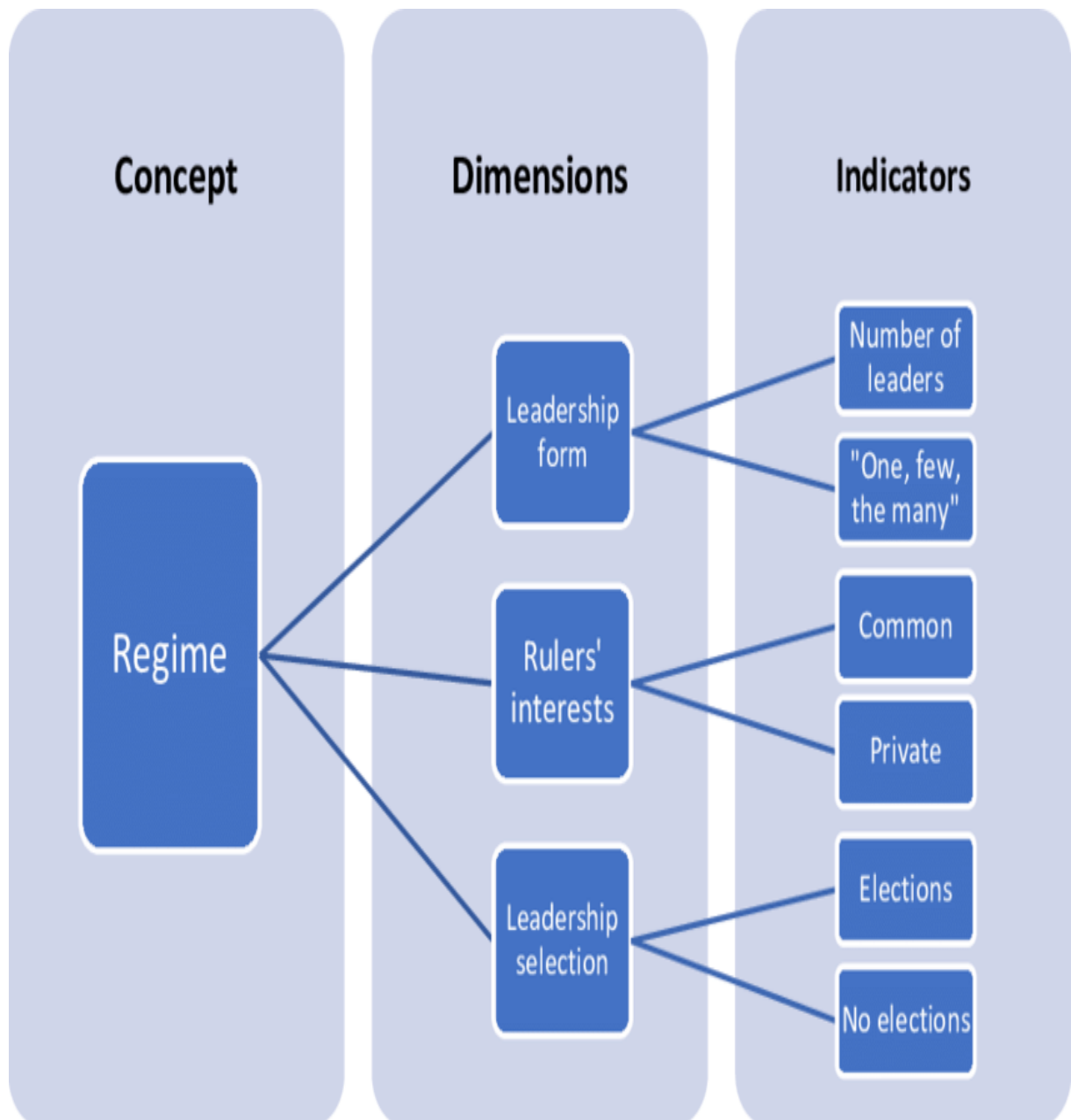
**3- Indicators:** These represent realistic, tangible, and symbolic characteristics and meanings of the subject of study. The purpose of identifying them is to enhance the description of the concepts under discussion.

Example: The variable of job satisfaction can be indicated by: enthusiasm, punctuality, willingness to work overtime to improve productivity, attendance at meetings, diligence, and a cooperative spirit, etc.

While indicators of dissatisfaction include: feigning illness, frequent absences, workplace problems, declining performance, failure to attend meetings, and strikes, etc.

**4- Dimensions:** According to Maurice Angers, everything that is unobservable and cannot be measured remains a dimension, representing an intermediate level between the abstract and the concrete.

*Example:* The capabilities of a particular organization, in terms of dimensions, can be: material, human capital, technological, geographical, etc.



**The source:** *Introduction to Political Science Research Methods: An Open Education Resource*, ed. Franco, Lee, Vue, Bozonelos, Omae, and Cauchon.p

The example above of a concept, dimensions, and indicators 5.1.3 Concept mapping Concept mapping is a method for identifying concepts, dimensions and indicators, and their relationships to each other. Concept mapping can help with formulating a research topic and eventually a research question.

Conceptualization is a fundamental step in the research process, as it provides clarity and precision to the phenomena under study. By defining key concepts,

variables, indicators, and dimensions, researchers ensure that their study is structured, measurable, and coherent (Jaafar,2019). Effective conceptualization bridges theoretical understanding and empirical investigation, allowing abstract ideas to be operationalized into observable and testable elements. Ultimately, a well-conceptualized framework enhances the validity, reliability, and relevance of the research findings, guiding both analysis and interpretation.

## **08- The Methodology of Reviewing Previous Studies.**

Previous studies and related literature represent a crucial resource that researchers must consult before embarking on their research path. They help researchers define their research problem, select tools that align with their objectives, and review existing literature on related topics. Furthermore, they help researchers avoid repeating the mistakes of previous researchers, particularly methodological errors.

Despite the pivotal importance of previous studies, many researchers still face challenges not only in utilizing them but also in effectively leveraging their findings. A sound, systematic approach to previous literature requires a set of established scientific methods, agreed upon by researchers in each discipline, based on analysis and comparison. This approach aims to ensure that the current research is grounded in objective knowledge, credibility, and innovation.

### **1- The Conceptual Framework of Previous Studies:**

Previous studies are a fundamental pillar of all scientific research. Such research cannot be conducted without referring to reference frameworks, which serve as a source of knowledge for the researcher on the one hand, and a tool to help identify knowledge gaps on the other.

Professor Ali Gharbi defines them as scientific research that is similar to or closely related to the current research in some aspect, and which has been conducted by other researchers (or may be one or more by the same researcher). They are sometimes referred to as similar studies (Ali Gharbi, 2009, p. 54). Although some researchers see a difference between the two concepts, it is almost non-existent, considering that research in previous studies is only a

selection of studies that were conducted in the past and that meet the condition of similarity to the study being conducted at the present time. This does not mean addressing all previous research. When we say similarity, we mean that they addressed our topic in the study, whether closely or remotely. Sometimes we may find identical studies in terms of the issues addressed, and the methods or theories that were employed in the context of the research.

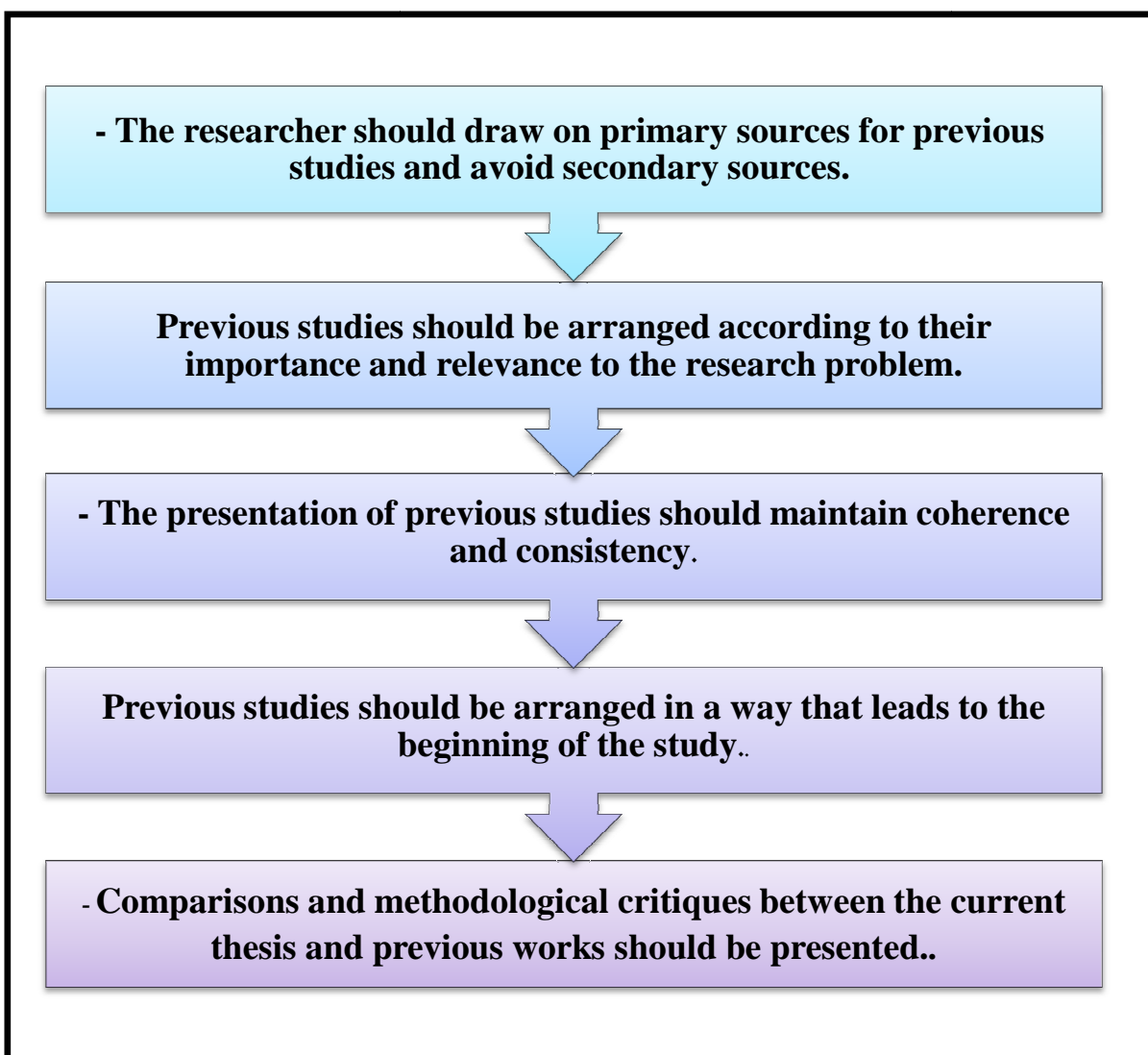
While Maurice Angers considers it an indispensable source of inspiration for the researcher, given that every current research is an extension of previous research, reviewing previous literature is therefore crucial for a thorough, systematic, and comprehensive examination of what has been published on the topic at hand (Angres, 2013, p. 125). Other researchers believe that this concept refers to previous research to which the researcher refers in order to obtain data and information related to the research topic, then to study it thoroughly, and then to analyze it using the scientific and methodological methods employed in scientific research, and after that to identify the points of convergence and divergence between it and the hypotheses of the proposed scientific research (Sini, Saeed Ismail, 1994, p. 155).

## **2- Methodological Criteria for Employing Previous Studies in Social Research:**

Most intellectual currents and methodological schools, despite their differing epistemological approaches, agree that presenting previous studies is an indispensable methodological step. Therefore, their selection is not done randomly. Rather, the researcher needs to understand a set of elements that must be present in the collected studies for them to be included in the previous studies section. We summarize the most important of these in the following points:

- Selecting studies relevant to the research.

- Relying on primary sources that addressed the problem and worked to explain the current idea.
- Summarizing the ideas presented in the study that are relevant to the research.
- Logically organizing the studies, either chronologically from oldest to most recent, or thematically according to categories of themes and topics related to the dependent and independent variables, or methodologically based on the methodologies they employed (quantitative, qualitative, or mixed). We can summarize the aforementioned elements in the following figure:



*The figure above: Standards for employing previous studies in scientific research.*

There are four areas of previous studies from which a researcher can choose their research problem:

**a) The first chapter of the thesis:** When the researcher presents their research problem and discusses several related issues, they must consider what previous studies have addressed and what points they have overlooked, leading them to focus on one of these areas in their research.

**b) Research results:** Whether positive or negative, and whether the study hypotheses are proven or not, the results themselves require further investigation.

**c) Research recommendations:** All research recommendations are reference points for further research. How can these recommendations be applied and transformed into research procedures?

**d) Research proposals:** By selecting and studying one of the research proposals. (Al-Khouli, 2010, p. 4)

Regardless of the position of previous studies in the research, the process of selecting them requires scientific conditions that must be taken into consideration. These conditions include the following (Gharbi, 2009, p. 57):

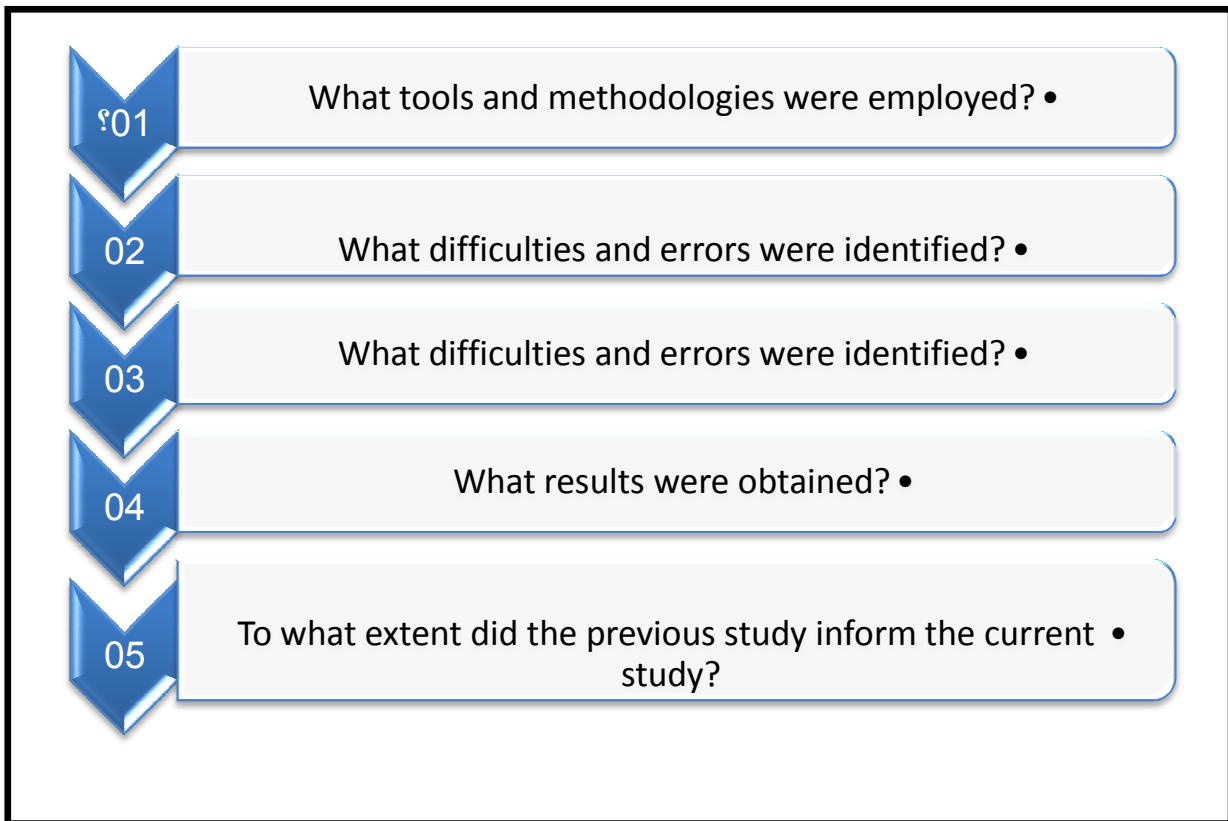
- The full title of the study.
- The name of the study's author, whether an individual or a team.
- The supervising body, which may be a supervising professor or a research institution.
- The date the study was conducted, also known as the timeframe.
- The study's objectives and hypotheses, if any.
- The study sample, defined as a human population, and the geographical area in which it was conducted.
- The most important findings, those most closely related to the study's topic.

- How these findings can be applied to ongoing research.

**3- Commentary on Previous Studies:** Each previous study shares certain similarities and differences with the current research. The greater the differences, the more advantageous it can be for the researcher, provided that these differences are scientifically and socially constructive. At the same time, the researcher should avoid criticizing the work of others and instead focus on presenting points of convergence and divergence.

When reviewing previous studies, the researcher should focus on their usefulness, such as how they helped in formulating hypotheses, pursuing the same or some of the same objectives, or selecting a theory to confirm certain results. They should also consider how the studies informed the research regarding methodology, tools, sample selection, and so on. In this case, the researcher must precisely and thoroughly identify the various areas of benefit gained from the previous studies. This will lead to a comprehensive and holistic evaluation of all the selected and presented previous studies. The purpose of reviewing these studies in scientific research is to provide summaries of their methodologies and results, or just the results, without attempting to evaluate seemingly weak methodologies or discussing or relating the results to one another.

It is essential to find answers to the following questions during the research process, as illustrated in the diagram below:



**Figure: Questions Raised by the Researcher for Commenting on Previous Studies**

In general, the researcher's commentary on previous studies, after thoroughly reviewing them and ensuring that he has achieved the principle of comprehensiveness in understanding and comprehension, demonstrates that what he is reviewing is the result of the efforts of researchers who preceded him in the study. This does not close the doors of research to him, but rather, he must prove through his objective language in analysis and commentary that he is adding to the field of research. Addition in this context is not synonymous with novelty, but it may be through the inclusion of new information or the presentation of ideas in a new style with its arguments for addressing and modifying shortcomings, or proving and confirming results.

## 09- sampling techniques and types

The empirical study will be accurate and valid when the proper sample technique will be cautiously selected. Sampling technique involve the selection of a subset from the larger population and are core to research, since through sampling, the nature and generalizability of findings depend on it (Elfil, Negida,2017,p52). The success of any study would depend upon the appropriateness of the sampling method.

The rationale for sampling methodologies is the capability of such procedures to infer characteristics about populations without the unrealistic expectation inherent in evaluating an entire group. This is very important and necessary in cases where complete enumeration becomes impossible for a given population due to such operational issues as time, resources, or access restrictions. A properly chosen sample would capture and enhance the external validity and generalizability of the findings (Andrade,2020, p86).

### **1- The difference between the terms "sample" and "sampling":**

A sample is a smaller, representative sample of the original population, possessing the same characteristics and features. This allows the researcher to conduct their research on it and then generalize the results to the entire population. Samples are used for studies and research because it is difficult or impossible to conduct a study on an entire population due to its large size and the researcher's inability to enumerate all its members.

Sampling is the process of identifying and selecting the appropriate method or technique to extract a sample that matches the original population in all its conditions and characteristics (Al-Saati,1982, p59). However, the researcher may be surprised after selecting the sample to find that it does not match or resemble the population and is completely different. This is due to the presence

of other factors that were not considered when applying some statistical methods and tools in selecting the sample.

**2- What is the benefit of using samples in scientific research?** According to K. Suresh, S. V Thomas, G. Suresh in their book titled *Design, data analysis and sampling techniques for clinical research*, using sample can facilitate the study in several points such as:

- ✓ Applying the research study to a small sample of the study population reduces the high costs and expenses that would be incurred when conducting the study on the entire population.
- ✓ The researcher can focus entirely on the sample and arrive at innovative and unique results and solutions that are difficult to deduce when focusing on the entire population.
- ✓ It allows for immediate access to the sample's responses to specific stimuli, whereas it is difficult to gather responses from all members of the original population simultaneously or within a short timeframe.
- ✓ It saves considerable time and effort in data collection from a study sample compared to the entire population.
- ✓ When selecting a sample, the researcher will focus on it and exert significant effort, ultimately yielding accurate and reliable information due to the ability to concentrate all elements within the sample and apply the study more easily.
- ✓ It allows for the application of studies to a sample, whereas this is impossible with a very large study population.( Suresh, V Thomas,2011 p290).

#### **4- Probability Sampling Methods**

##### **1. Simple random sampling**

In this case each individual is chosen entirely by chance and each member of the population has an equal chance, or probability, of being selected. One way of

obtaining a random sample is to give each individual in a population a number, and then use a table of random numbers to decide which individuals to include.<sup>1</sup> For example, if you have a sampling frame of 1000 individuals, labelled 0 to 999, use groups of three digits from the random number table to pick your sample.

## **2.Systematic sampling**

Individuals are selected at regular intervals from the sampling frame. The intervals are chosen to ensure an adequate sample size. If you need a sample size  $n$  from a population of size  $x$ , you should select every  $x/n$ th individual for the sample. For example, if you wanted a sample size of 100 from a population of 1000, select every  $1000/100 = 10$ th member of the sampling frame.

## **3.Stratified sampling**

In this method, the population would be divided into distinct groups, commonly known as strata, based on uniform categories such as age, sex, or education. Random samples would then be taken from each stratum to derive a sample representative of the entire range of categories. This will increase the accuracy of the estimates, given that every subgroup is well-represented(Gravetter, L Forzano,2012,p139), thereby making this method more suitable for populations where great variability in key characteristics exists. For example, in a study of the health outcomes of nursing staff in a county, if there are three hospitals each with different numbers of nursing staff (hospital A has 500 nurses, hospital B has 1000 and hospital C has 2000), then it would be appropriate to choose the sample numbers from each hospital *proportionally* (e.g. 10 from hospital A, 20 from hospital B and 40 from hospital C).

## **4.Clustered sampling**

In the clustered sampling method, the cluster or group of people are formed from the population set. The group has similar signficatory characteristics.

Also, they have an equal chance of being a part of the sample. This method uses simple random sampling for the cluster of population.. All members of the selected households (clusters) are included in the survey.

## **5- Non-Probability Sampling Methods**

### **1. Convenience sampling**

Convenience sampling is perhaps the easiest method of sampling, because participants are selected based on availability and willingness to take part. Useful results can be obtained, but the results are prone to significant bias, because those who volunteer to take part may be different from those who choose not to (volunteer bias), and the sample may not be representative of other characteristics, such as age or sex. Note: volunteer bias is a risk of all non-probability sampling methods.

### **2. Quota sampling**

This method of sampling is often used by market researchers. Interviewers are given a quota of subjects of a specified type to attempt to recruit. For example, an interviewer might be told to go out and select 20 adult men, 20 adult women, 10 teenage girls and 10 teenage boys so that they could interview them about their television viewing. Ideally the quotas chosen would proportionally represent the characteristics of the underlying population.

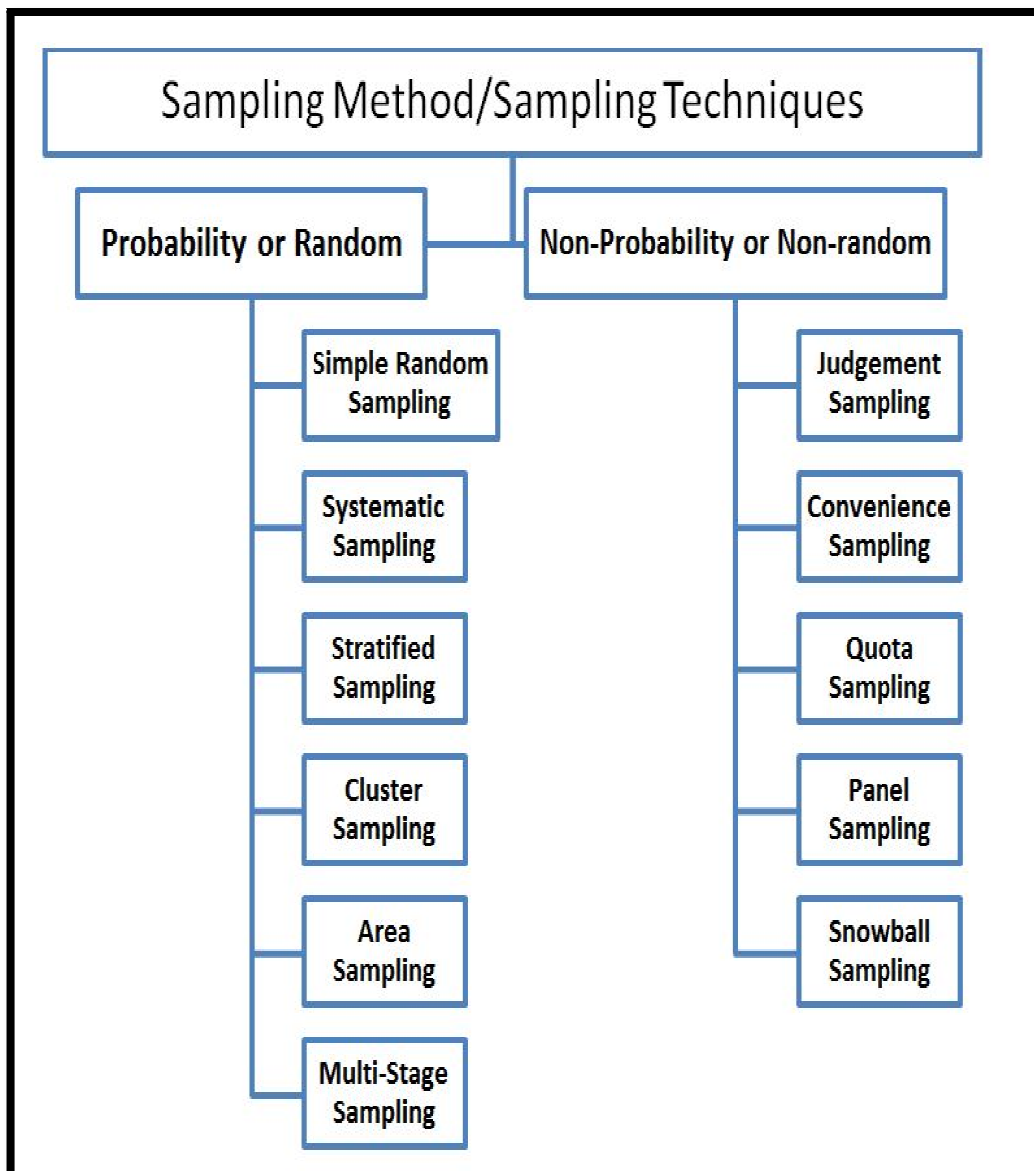
### **3.Purposive Sampling**

Also known as selective, or subjective, sampling, this technique relies on the judgement of the researcher when choosing who to ask to participate. In this method, the subjects are selected by the choice of the investigators. The researcher assumes specific characteristics for the sample (e.g. male/female ratio = 2/1) and therefore, they judge the sample to be suitable for representing the population(C Teddlie;2007,p100).

Judgement sampling has the advantage of being time-and cost-effective to perform whilst resulting in a range of responses (particularly useful in qualitative research). However, in addition to volunteer bias, it is also prone to errors of judgement by the researcher and the findings, whilst being potentially broad, will not necessarily be representative.

#### **4. Snowball sampling**

This method is used when the population cannot be located in a specific place and therefore, it is difficult to access this population. In this method, the investigator asks each subject to give him access to his colleagues from the same population. This situation is common in social science research, for example, if we running a survey on street children, there will be no list with the homeless children and it will be difficult to locate this population in one place e.g. a school/hospital.



**Figure.** Sampling techniques in research.

## 6- Probability sampling vs Non-probability Sampling Methods

The below table shows a few differences between probability sampling methods and non-probability sampling methods.

<b>Probability Sampling Methods</b>	<b>Non-probability Sampling Methods</b>
Probability Sampling is a sampling technique in which samples taken from a larger population are chosen based on probability theory.	Non-probability sampling method is a technique in which the researcher chooses samples based on subjective judgment, preferably random selection.
These are also known as Random sampling methods.	These are also called non-random sampling methods.
These are used for research which is conclusive.	These are used for research which is exploratory.
These involve a long time to get the data.	These are easy ways to collect the data quickly.
There is an underlying hypothesis in probability sampling before the study starts. Also, the objective of this method is to validate the defined hypothesis.	The hypothesis is derived later by conducting the research study in the case of non-probability sampling.

Sampling is a cornerstone of all scientific research, regardless of the subject or discipline. Despite the variety of sample types and selection methods, and despite the preference of most specialists in research methodology within the humanities and social sciences for probability sampling due to its greater objectivity (since the researcher does not interfere in the selection process), it cannot be definitively stated that this type is superior to others. The nature of the

subject matter dictates the researcher's choice of a specific sample type, and the nature of the research objectives leads to a preference for one sample over another. Most importantly, the sampling method is crucial. If the method is sound, the results will be accurate and generalizable. However, if the researcher encounters problems and makes selection errors, the results will not be accurate.

## 10- Data Collection Tools: Questionnaire, Interviews, Observation

Research tools are the means by which a researcher can solve their problem, whatever it may be, using data, samples, equipment, etc. Good research is characterized by gathering information that can answer its questions. Therefore, the researcher must use several tools to provide the research answers in a way that ultimately ensures reaching the objective, in accordance with the nature of the study and its tools. They must ensure that the chosen tool is appropriate for the research.

Why are data collection tools essential in scientific research?

Because they simply:

- ✓ Help the researcher understand the phenomenon under study.
- ✓ Contribute to obtaining accurate and realistic results.
- ✓ Are used to test hypotheses and validate data.
- ✓ Enable the systematic analysis of data using tools such as Excel or even SPSS.

### 1- Questionnaires:

Questionnaires are frequently used in descriptive research. They are a simple and direct tool designed to identify the participants' experiences and attitudes toward a specific topic by posing questions that are relatively standardized in their structure and wording.

Abu Al-Nil (1995) defines a questionnaire as a set of questions designed to elicit the research findings (Al-Jarjawi, 2010, p. 16). Its purpose is to obtain factual data, not just impressions and marginal opinions. The questionnaire is a set of diverse questions that are related to each other in a way that achieves the researcher's objective through the problem posed by his research. The questionnaire is sent by mail or by any other means to a group of individuals.

## **2- Types of Questionnaires:**

**1- Open-Ended Questionnaires:** These are questions that the teacher can answer as often and as they see fit. Open-ended questions are not predetermined answers, leaving room for diverse opinions. For example:

*What are your suggestions for improving the integration of artificial intelligence in job performance?*

Their advantages include suitability for complex topics, providing accurate information, and ease of preparation.

Their disadvantages include cost and the difficulty in analyzing and classifying the responses.

**2- Closed-Ended Questionnaires:** These have questions with predetermined answers, such as yes or no. They are of two types:

a) *Short-answer questions*, each typically with two answers: yes or no, agree or disagree.

b) *Ranking scales*: These are declarative statements that require a judgment or rating. This judgment or rating is one of three, or more than three, options

**3- Mixed open-ended and closed-ended questionnaires:** This type of questionnaire requires some questions to elicit specific answers and others to elicit open-ended responses, such as: What is your evaluation of the services provided by the organization's official website? (Closed) Good. Average. Poor. If they are average or poor, what is your suggestion for improving them? (Open-ended).

Clearly, closed-ended questionnaire questions are better for both the researcher and the respondent for several reasons:

### **3- Characteristics of a Good Questionnaire:**

- Understandable language and a clear style that leaves no room for multiple interpretations, as this can confuse respondents and lead to inaccurate answers.

- Consideration of respondents' available time; questions should not be too long to avoid discouraging respondents from completing the questionnaire or providing hasty and inaccurate responses.
- Providing a sufficient number of options to allow respondents to accurately express their diverse opinions (Brace, 2008)
- Using polite and persuasive language to encourage participation and cooperation in completing the questionnaire, such as "please" and "thank you."
- Ensuring the coherence between the different questionnaire questions, as well as their connection to the research topic and problem.
- Avoiding embarrassing questions that might discourage respondents from completing the questionnaire.
- Avoiding complex questions that encompass more than one aspect of the topic being investigated, as this can confuse respondents.
- Provide respondents with a set of instructions and clarifications required for answering, and explain the purpose of the questionnaire and the areas in which the researcher will use the information obtained. For example: Some questions may affect more than one box, so please check the boxes that correspond to the correct answers.
- It is recommended to send envelopes with the researcher's full address and affix a stamp to the envelopes to facilitate the return of the completed questionnaire ( ).
- This method is suitable for research that requires obtaining confidential data.
- Data can be collected from respondents individually or in groups.
- Information can be gathered from a large number of people with minimal time and effort.
- This method is suitable for research that requires obtaining confidential data.

## **2- Interview.**

An interview is a dialogue between the researcher and the interviewee (the respondent). This dialogue begins by establishing rapport to ensure the respondent's minimum cooperation. The researcher then explains the purpose of the interview. Once the researcher feels the respondent is willing to cooperate, they begin asking pre-determined questions (Mustafa Alian, 2001). The researcher then records the respondent's answers in their own words. Thus, it is observed that an interview is essentially an oral questionnaire.

**2.1 The Importance of Interviews:** The importance of interviews is highlighted in the following cases:

- When the respondents are children or illiterate individuals.
- When the respondents are elderly, infirm, disabled, or ill.
- When the respondents are unwilling to provide their opinions and information in writing.
- When the subject of the study requires the researcher to personally observe the phenomenon and the study population.
- When the subject requires gathering information from a number of individuals who live or work together, such as factory workers or school teachers.

### **2.2 Characteristics of the Interview:**

The essential characteristics of an interview can be identified through the definitions of many researchers, particularly in the social sciences, as follows:

- 1- The verbal exchange that takes place between the interviewer and the interviewee, also known as an oral questionnaire.
- 2- The face-to-face interaction between the researcher and the interviewee.
- 3- The interview is directed towards a clear and specific purpose, which distinguishes it from casual conversation that has no objective.
- 4- Sequencing the questions: The researcher ensures that the respondent answers in a logical sequence without jumping from one question to another.

5-Flexibility: The researcher can ask and explain the question more than once to obtain specific information from the respondent, especially if there is a misunderstanding.

### **2.3 types of Interviews**

Interviews are classified according to the nature of the questions asked as follows:

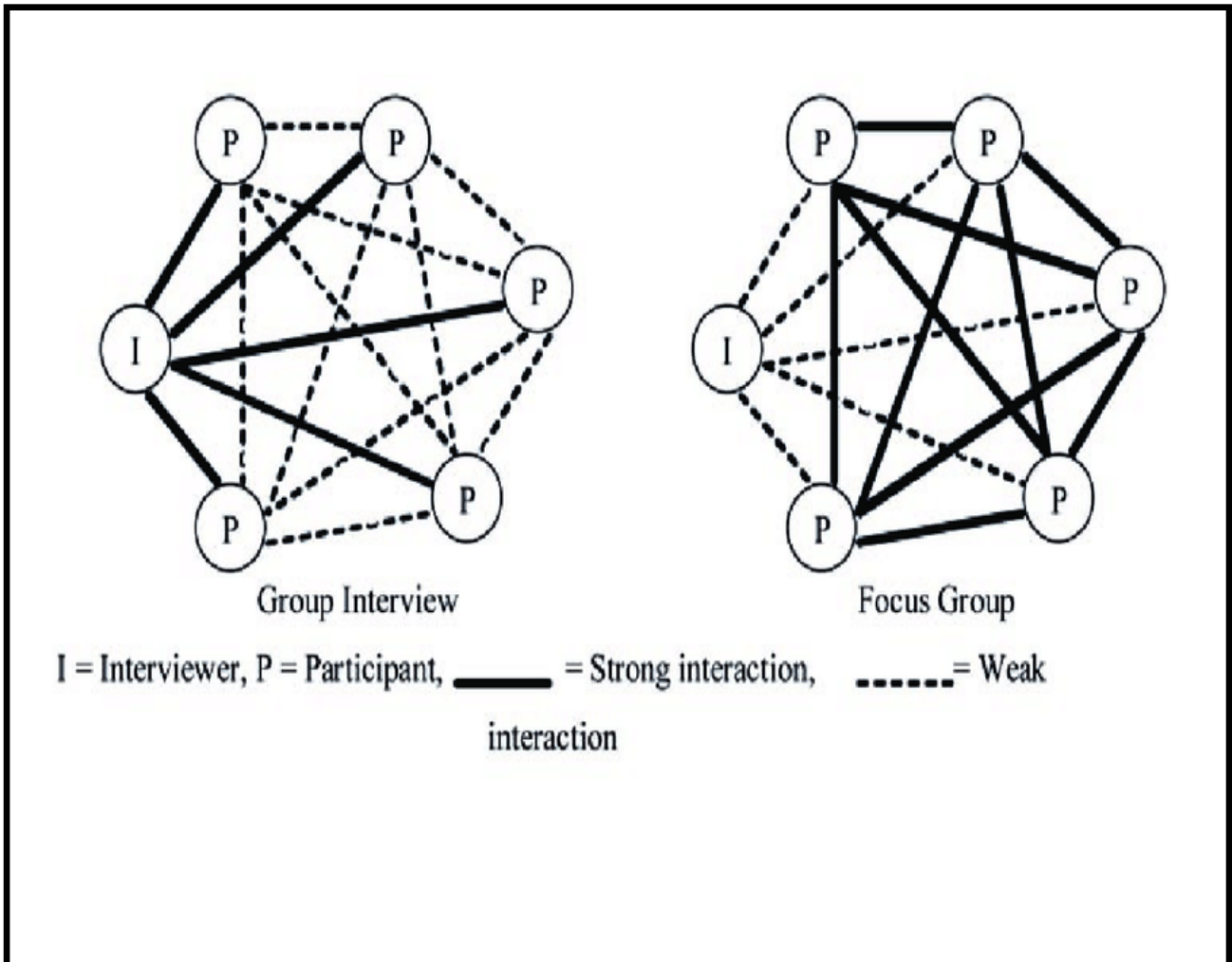
**1. Free or structured interview:** In this type of interview, the questions are not predetermined. Instead, the researcher poses a general question about the research problem, and based on the respondent's answer, the researcher proceeds to ask further questions (Wadjih, 2005). This type of exploratory interview is used when the researcher is unfamiliar with the problem.

**2. Structured or programmed interview:** In this type of interview, the questions are specific and sequential, prepared by the researcher. The questions are asked in each interview in the same order, as the researcher has a list of questions to be asked (Krueger, 2002). This type of interview is characterized by its speed and the ease with which the answers can be categorized and analyzed.

- In terms of the number of participants: Interviews can be divided into the following two types:

**1- Individual interview:** This is conducted between the interviewer and one participant.

**3- Group interview:** This is conducted between the researcher and a group of individuals in one place and at one time. Having individuals together provides them with the opportunity to participate in group discussions and express their opinions.



**Figure:** Group Interview vs. Focus Group Interaction Patterns (Edmunds, Brown 2010).

The diagram compares group interviews and focus groups based on interaction patterns.

**Group Interview:** Interaction is primarily between the facilitator (I) and each participant (P). Interaction among participants is minimal. The facilitator leads and controls the discussion.

**Focus Group:** Interaction among participants is strong, with less control by the facilitator. Participants engage with and build upon each other's ideas, creating a more dynamic and interactive discussion.

**2.4 Disadvantages of Interviews:** According to Mustafa Alian, interviews have some drawbacks that may hinder the research process, including:

- 1- They require significant time and effort from the researcher, especially if the sample size is large and the interview duration is lengthy.
- 2- It is difficult to reach and interview some individuals in person due to their position or because the researcher may face certain risks when conducting interviews with them.
- 3- The interview may be affected by the psychological state of both the researcher and the interviewee.
- 4- The interviewee may be biased in order to appear favorable to the researcher or others if the interview is group-based or televised.
- 5- It is difficult to interview a relatively large number of individuals because interviewing a single person takes a considerable amount of time for the researcher.
- 6- They require researchers trained in conducting them. If the researcher is not skilled and trained, they will be unable to create a suitable interview environment.

### ***3-Observation***

Observation in scientific research is defined as the researcher's attentive and meticulous examination of a particular phenomenon or event. The goal is investigation, exploration, and in-depth analysis, ultimately leading to the discovery of relationships between variables and the determination of results. Izzat Atwi (2007) defines it as a process in which the researcher observes and monitors a problem by following the correct scientific method and according to pre-established goals and plans. This process leads to the attainment of knowledge or the development of practical solutions to a scientific problem. Observation is a means of acquiring information, gaining experience, and understanding scientific phenomena with precision.

### ***3-1 What elements are necessary for scientific observation?***

- It is important for the researcher to have prior knowledge about the phenomenon under study before beginning observation.
- Attention is paramount in scientific observation, as it prevents the research from being biased towards personal viewpoints.
- The researcher must be aware and rational of everything they do in order to interpret their observations logically. Multiple people may observe the same phenomenon, and their interpretations will ultimately differ.
- The researcher should choose a specific method for recording observed events, and it is essential that they have prior experience in this area.
- Before beginning the observation process, the researcher must define the scientific problem and formulate questions and hypotheses.
- It is important for the researcher to have the appropriate expertise to conduct the analysis and then measure the data and information, whether quantitatively or qualitatively.

The researcher should set objectives for the observation process. This helps to increase focus on data collection, which is especially important when studying descriptive problems.

### ***3-2 Observation Procedures:***

Successful observation requires the following procedures:

1- ***Defining the scope of observation*** and specifying its location and time according to the study objectives. If the researcher wants to study verbal interaction between the teacher and students, they choose the classroom as the location and the lesson time. If they want to study student behavior during play, they choose the schoolyard as the location and the recess period as the time.

2- ***Preparing an observation grid to record the observed information.*** The observation grid usually includes patterns of expected behavior. If the researcher

wants to observe student interaction with the teacher, they prepare an observation card containing the items they want to observe, such as:

The duration of the teacher's speech in minutes, the duration of the students' speech in minutes, the instructions given by the teacher, the patterns of praise and punishment used, etc. In other words, the researcher prepares a detailed list of the behavior patterns they want to observe so that they can record their observations without spending too much time. This allows the researcher to shorten the recording time to the shortest possible period, freeing them up to continue the observation.

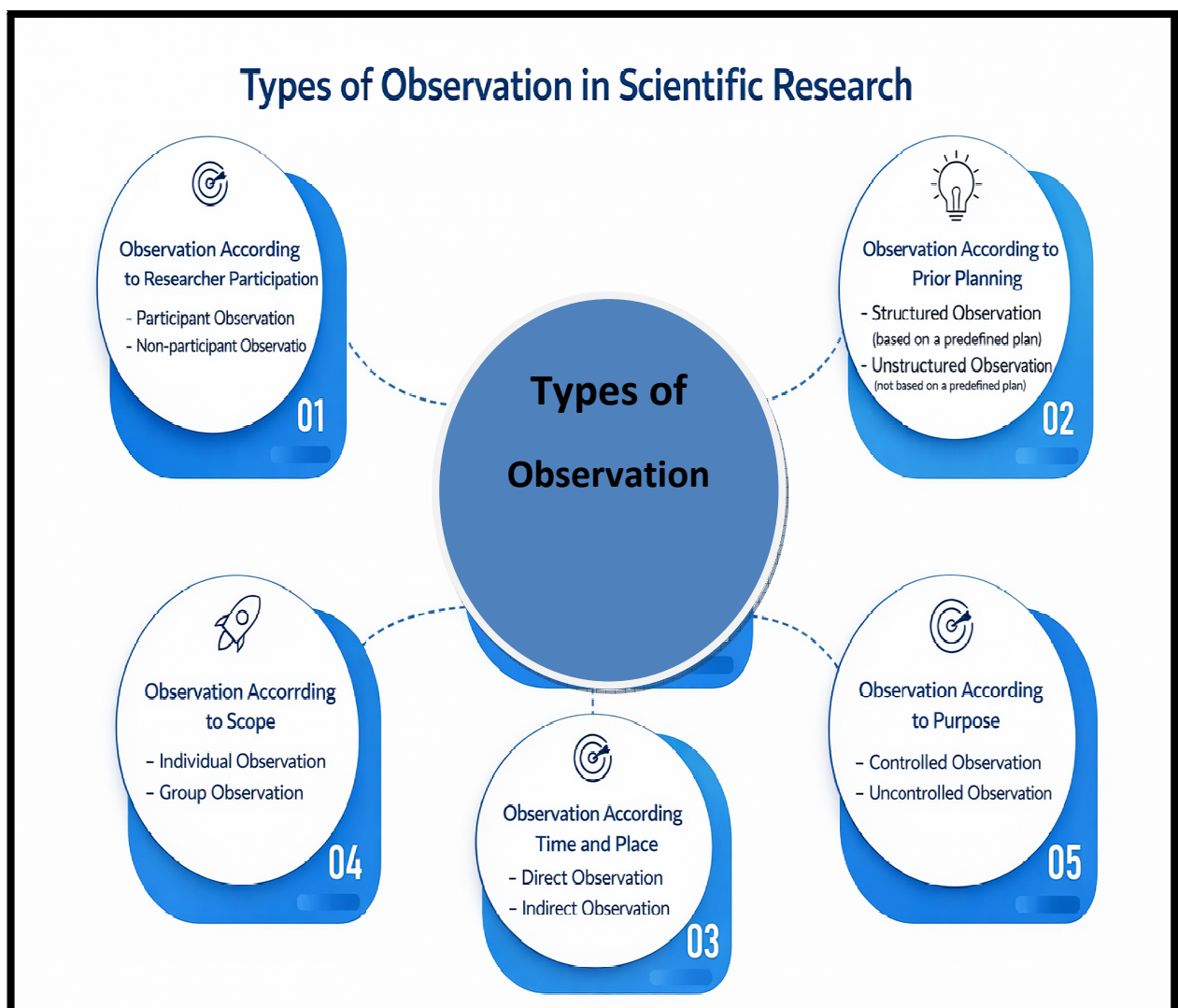
However, a researcher who does not prepare an observation card or use it will not be able to record everything they observe, nor will they be able to follow up on the observations because they cannot reconcile the task of observing behavior with the task of recording what they observe.

**3- *The researcher must verify the accuracy of their observations*** by repeating the observations more than once at intervals, or by comparing their observations with those of another researcher in the same field. The researcher is prone to many errors, such as bias or focusing on one aspect of behavior while neglecting another, thus rendering their observation unreliable. Therefore, they must repeat and reiterate the observation to ensure its accuracy and validity. Some researchers train assistants to conduct the observation, then compare their own observations with those of the assistant to further confirm the accuracy of the findings.

**4- *The researcher's observations must be recorded*** during the observation process. Postponing the recording until after the observation is complete is unacceptable, as important aspects might be overlooked. Some researchers use recording devices such as cameras or tapes, but this must be done carefully and with the consent of those being observed. They may object or alter their behavior if they sense the presence of cameras or recording equipment. For example, if a researcher wants to observe workers' living quarters, they cannot

film these houses without the workers' consent. However, the possibility of error remains, as a worker who feels a camera is entering their home might rearrange it to present a different appearance (Ubaidat, 1984).

Using recording tools undoubtedly enables the researcher to obtain a realistic picture of behavior and reduces the possibility of observational or human errors, provided that these tools are used in natural circumstances and with the consent of the individuals being observed.



*The diagram was prepared by the researcher to illustrate the types of observation in scientific research.*

### ***3-3 Disadvantages of Observation:***

Despite its advantages, observation has a number of drawbacks, including:

- The researcher may become engrossed in other events, which could distract them from observing the primary objective of the research and thus affect their work.
- If the researcher does not remain at the research site for a sufficient period, their conclusions may be premature.
- External factors such as weather conditions and the researcher's surroundings may hinder their work.
- Observation is limited because the researcher cannot cover all research sites simultaneously.
- Thus, we see that observation is of great importance in scientific research. It is one of the oldest research tools and helps the researcher study the research problem directly.

The following table will illustrate the main differences between scientific research tools (quantitative and qualitative).

<b>The tool:</b>	<b>Features:</b>	<b>Disadvantages:</b>
<b>Questionnaire</b>	Easy to implement, suitable for large samples	May have difficulty responding to or understanding questions
<b>Interview</b>	Direct interaction, rich information	Requires more time and effort
<b>Direct observation</b>	Accurately monitors real-world behavior	Needs high-level training and accuracy
<b>Documents and records</b>	Provides readily available historical data	May lack up-to-date data

### **Can more than one instrument be combined in a single study?**

Yes, this is called a mixed-methods approach. Researchers use several instruments to collect data in order to improve the accuracy of the results. For example:

- Using questionnaires to collect quantitative data.
- Conducting interviews to understand psychological or behavioral dimensions within a limited sample.
- Supporting the study with observations within a specific environment or institution under investigation.

## 11-Data Analysis: Quantitative Methods

Research methodologies in the social sciences and humanities are divided into two main types: quantitative and qualitative. Quantitative methodologies are used to produce numerical or statistical data; that is, the concept of this methodology is linked to quantity, description, and the measurability of the phenomena under study. Qualitative methodologies, on the other hand, primarily focus on producing data about the experiences and personal meanings of social actors. These methodologies typically rely on the language of the social actor or on observing their behavior.

Quantitative analysis is a scientific methodology that uses numerical data and statistics to understand phenomena or solve problems. This methodology is used to analyze precise data by applying mathematical and statistical tools to derive clear insights based on accurate figures.

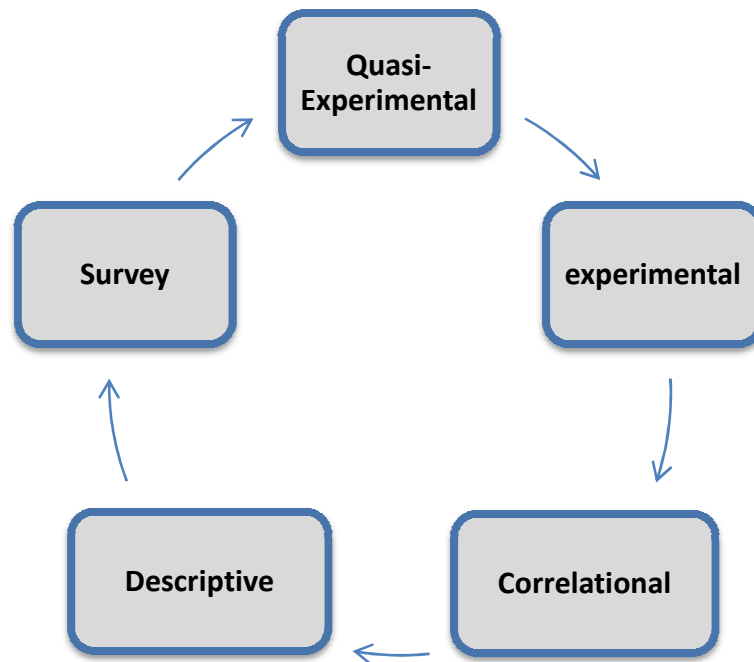
It is not simply numerical analysis; it is a comprehensive process that enables data-driven decisions rather than relying on intuition or personal bias. It is applied in various fields.

### ***1- Objectives of Quantitative Research:***

- Quantitative research aims to identify the relationships between the independent variable(s) and the dependent variable(s).
- Quantitative research can be either experimental, where the researcher studies the research sample before and after conducting experiments, or descriptive, where the study sample is described only once.
- Scientific research deals with logic and numbers, using figures and tables. Its goal is to present accurate and consistent values, with a primary focus on fixed and unchanging data and figures (Bryman, 2016).

- Quantitative research is based on convergent, detailed reasoning, not divergent reasoning.
- It involves explaining and processing all data to arrive at the best and most accurate results.
- It also involves classifying and identifying features and developing statistical models.

***Figure:*** TYPES OF QUANTITATIVE RESEARCH METHODS



## **2-Characteristics of the Quantitative Method in Scientific Research:**

Characteristics of the quantitative approach in scientific research: Quantitative research is distinguished by a set of features which (Cohen, Manion, & Morrison, 2018) attempted to summarize as follows:

It can be relied upon with large study samples that accurately represent the study population, thus contributing to the attainment of sound and logical scientific results.

- It utilizes more organized research tools compared to those used in other methods.
- It presents clear and objective questions and seeks objective answers.
- It allows for the replication and repetition of studies and tests, lending reliability and accuracy to studies employing the quantitative method in scientific research.
- Data and information are presented through statistics and figures.
- All aspects of the study in quantitative research are carefully and meticulously designed before proceeding to the data collection stage.
- Questions and other numerical data collection tools are the primary instruments used in quantitative research
- Research findings can be broadly generalized in quantitative studies, which facilitate the discovery of the nature of relationships between different research variables more flexibly, enabling easier and more accurate prediction of future results.

### **3-Steps for Quantitative Analysis to Accurately Analyze Data**

To conduct a successful quantitative analysis, specific steps are followed to ensure the systematic collection, organization, and analysis of data. These steps include:

**1. Collecting Numerical Data** The first and most essential step is to accurately identify and collect the necessary data. The data must be quantitative, measurable, and relevant to the problem at hand.

In the social sciences, numerical data are widely used to measure and analyze social phenomena in an objective and systematic manner. Common examples include population size, literacy and unemployment rates, voter turnout

percentages, average household income, and crime rates. Researchers also rely on survey-based numerical data such as Likert-scale responses to assess attitudes, levels of political participation, trust in institutions, or frequency of social media use measured in hours or number of interactions. These quantitative indicators enable researchers to compare groups, identify trends, test hypotheses, and generalize findings across populations. (Cohen, Manion, & Morrison, 2018).

**2. Organizing and Analyzing Data Using Statistical Tools** After data collection; it is organized using tables, graphs, or analytical software.

Statistical tools used include the arithmetic mean, frequency, standard deviation, and correlation between variables.

This organization helps in understanding patterns and uncovering hidden trends in the data.

**3. Interpreting Results to Make Informed Decisions** The ultimate goal is to provide clear recommendations or solutions based on the results. The data is interpreted and linked to the practical context, enabling companies or organizations to make accurate decisions

**4- Quantitative Analysis Tools Used:** Many tools are used to facilitate quantitative analysis and ensure its accuracy. These tools include:

1. **Statistical Software such as SPSS:** This software specializes in statistical data analysis and provides comprehensive tools for effectively handling large amounts of data. It is used in many fields for descriptive and predictive analyses and hypothesis testing.

2. **Microsoft Excel:** This versatile tool is used to organize data, perform preliminary statistical analyses, and create visual reports such as graphs and charts.

3. **Mathematical Models** Mathematical models are the cornerstone of quantitative analysis. They can be used to simulate various phenomena, such as forecasting the demand for a particular product or assessing financial risks.

4. **Advanced Data Analysis Tools (Tableau):** These tools are used to provide interactive visual reports that make it easier for users to understand the data and make informed decisions.

According to quantitative researchers, a researcher's values may play a role in determining the topic or problem they are investigating, but the actual research must be free from the influence of values. That is, the researcher must follow procedures to isolate and exclude all subjective elements, such as values, from the research situation, so that only objective facts remain.

**5- Quantitative Data Processing:**

**First:** Descriptive Statistics: This stage is crucial.

It involves transforming the raw data (graphs) into a statistical summary, which facilitates subsequent statistical processing. The researcher compiles the data, calculates frequencies, and creates graphs, providing an initial visual summary of the statistical characteristic under study. Sometimes, it may be necessary to classify, summarize, compress, and transform the data.

**Second:** Statistical Inference: This step relies on mathematical statistics.

It involves formulating hypotheses about the distribution governing the general phenomenon. A study is then conducted on the sample to verify or refute these hypotheses (hypothesis testing). These tests allow us to determine the probability that variables meet a specific characteristic. The phenomenon can then be modeled. In the case of statistical modeling, the model is constructed from the available data.

Interpreting results means making data understandable to everyone, making the data speak for itself, and giving meaning to the numbers. Through interpretation, the researcher must convey the essence of their research by giving concrete, operational meanings to all the indices and factors developed through statistical calculation.

## 6- The Survey Method as One of the Quantitative Research Methods.

The survey method is defined as the systematic collection of data relating to administrative or social institutions such as universities, schools, and hospitals, for example, and their various activities and employees during a specific period of time. The main function of survey studies is to collect information that can be analyzed and interpreted, and then conclusions can be drawn.

The survey method, or survey studies, possesses a set of characteristics that distinguish it from other methods and approaches. These include:

- ↪ The survey method (or survey studies) is based on describing and diagnosing a phenomenon, collecting data about it, and reporting its current state—that is, what actually exists within a segment of society.
- ↪ The survey method is primarily concerned with and focuses on the present.
- ↪ The survey method often aims to obtain data that can be classified, interpreted, and generalized for future use.
- ↪ The survey method is usually applied within a geographical area, whether large or small. It can be conducted through a comprehensive survey or a sampling method. However, large samples are often used to help the researcher obtain accurate results with low margins of error, thus enabling the generalization of findings to the study population.
- ↪ The survey method studies the phenomenon as it exists in reality, without any intervention by the researcher to influence it (Badr,1984) .

### - **Steps for implementing survey studies in research:**

#### - *Step 1: Identify research goals and objectives*

By identifying goals, several questions will be answered: What type of information am I collecting? Is it general or specific? Is it for a particular or broad audience? Research goals will define the answers to these questions and help focus the purpose of the survey and its goal (surveyplanet.com, 2026).

- ***Step 2: Define the population and sample (who will participate in the survey?)***
- Sampling is one of the most important steps in survey research and a cornerstone of the process. Therefore, the researcher must:
  - Determine the sample size and the sampling method to be used.
  - If the researcher intends to generalize the results to the population, the sample used must be representative of that population.
  - The sampling method most likely to be representative of the population is random sampling.
  - Probability random sampling allows the researcher to estimate the degree to which the sample values deviate from the characteristics and traits of the population (Aliyan, Mustafa, 2008).
- ***Step Three: Building the Instrument:*** One of the main tasks in survey research is building the instrument that the researcher will use to collect data. The questionnaire is one of the most commonly used instruments in survey studies.
- ***Step Four: The Procedural Aspect:*** After completing the preparation of the data collection instrument, it should be initially tested to ensure its suitability for all the required data.

## 12-Data Analysis: Qualitative Methods

The term "qualitative research" is a broad term encompassing various types of research in sociology, including ethnographic research, case studies, field research, naturalistic research (conducted in a natural setting), and participant observation research. These research methods differ in their philosophical and analytical foundations, yet they all share several common features that place them in the same category as quantitative research.

Qualitative inquiry differs from quantitative methods in studying social and behavioral phenomena in that it rejects the notion that the aims and methods of the social sciences are identical to those of the natural and physical sciences, at least in principle.

Shank (2002) defines qualitative research as "a form of systematic empirical inquiry into meaning". By systematic he means "planned, ordered and public", following rules agreed upon by members of the qualitative research community. By empirical, he means that this type of inquiry is in the world of experience. Inquiry into meaning says researchers try to understand how others make sense of their experience.

***1-Characteristics of Qualitative Research:*** Social research is somewhat exploratory; discovering and describing the field of study comes at the expense of theoretical study of the subject, which is a drawback of the qualitative approach.

**1-Hypotheses are modified and expanded** based on the data obtained during the fieldwork. Therefore, social and anthropological theories have a dynamic character, as they evolve during the research process based on existing data.

**2- Research as Interactive:** While quantitative research methods emphasize the distance between the researcher and the research subject, qualitative methods, on

the contrary, emphasize that the research process should be interactive between the researcher and individuals belonging to a particular culture.

**3- The Dynamic Nature of the Relationship Between Research and the Subject:** Understanding research as a process of interaction and communication between the researcher and the research subject means that the relationship between the research and the subject is dynamic. This dynamism is what distinguishes the research and the research topic. As (Patton, 2002) states, qualitative research is primarily concerned with models of interpretation and action that have a specific social obligation. However, these collective models of interpretation and action cannot be conceived as existing and unchanging; rather, they are reproduced and modified according to the hypotheses of qualitative sociology through the actions and interpretations of active members of society.

**4- Critical Reflection on the Subject and Analysis:** Qualitative social research is characterized by critical reflection on the subject, or reflection on the research topic and the research process. The principle of reflection on the subject of analysis—that is, the phenomena and processes to be studied—is based on the theoretical conception of the subject area itself Patton (2002). The fundamental premise of the explanatory model lies in the assumption of critical reflection on the meanings of the linguistic products of human behavior (symbols, speech acts, linguistic or non-linguistic interpretations, signs, and actions).

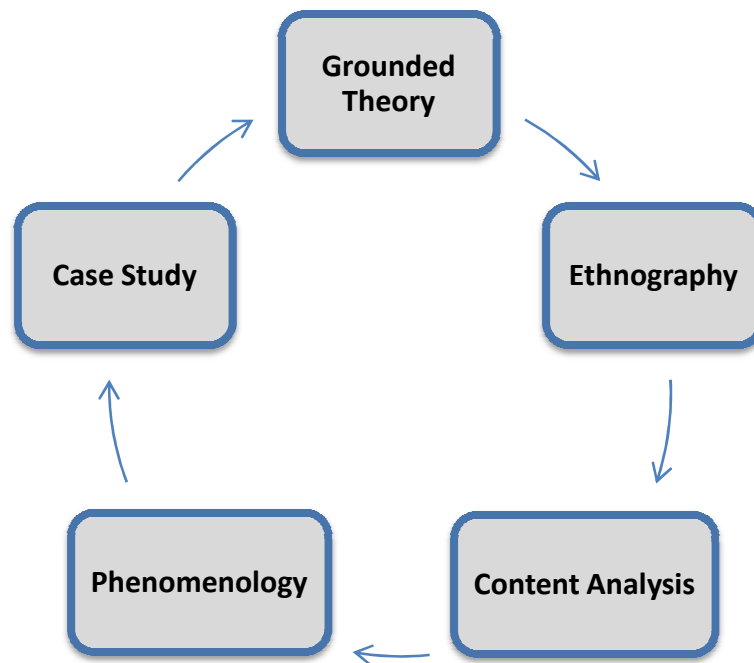
**5. Interpretation:** The principle of interpretation means that we expect the social researcher to explain the various steps of the research process as clearly as possible. It also defines the rules by which the data obtained in the field should be interpreted. The qualitative researcher must interpret their data more effectively and avoid falling prey to quantification and coding, as is the case in quantitative research. Qualitative research is intellectual, mental, and field-based; even empirical reality is investigated as an intellectual and

epistemological problem, unlike the quantitative research methodology, which is predominantly mechanistic and technical.

**6. Flexibility:** Narrative interviews are characterized by flexibility and the participation of the research subjects in the research process. In quantitative research, the field of research is known and defined; therefore there is no openness or flexibility. As for the qualitative researcher, they must develop and define the research process, so that their task is to guide the research to obtain data and interpretations from empirical social life, thus keeping the research rooted in it.

Finally, the goal of qualitative research lies in how the problem is formulated and presented, and how the required data is obtained.

***Figure:*** TYPES OF QUALITATIVE RESEARCH METHODS



Source: updated From (Perumal, 2010)

## **2-Validity and Reliability Criteria in Qualitative Research**

Qualitative validity refers to the degree of independence regardless of external conditions, while qualitative reliability refers to the extent to which the results are correctly interpreted (Creswell,2014). Validity depends on the ability to solve problems related to internal and external design, as it is linked to the likelihood that other researchers will reconstruct original analytical strategies.

### **4- The Case Study Method as One of the Quantitative Research Methods.**

It is one of the basic approaches to qualitative studies, based on the selection of a specific case that the researcher studies. This case may be a single administrative and social unit (a media institution, a hospital, etc.), or a single individual (for example, a digital content creator), or a single group of people (an internal audience of a specific economic institution or students of a specific major at a specific university, etc.). The study of this case is conducted in depth, addressing all the variables associated with it, and it is described and analyzed in full. The case study can be used as a means of collecting data and information in an in-depth descriptive study.

**5- Case Study Steps:** According to Maurice Angers, the researcher must respect the following steps:

- Identifying the case or problem to be studied.
- Gathering the necessary preliminary data to understand the case or problem and form a clear picture of it.
- Formulating the hypothesis or hypotheses that provide logical and plausible explanations for the research problem.
- Collecting, analyzing, and interpreting information to arrive at conclusions.

Data is collected in the case study methodology using a range of tools, the most important of which are:

Observation, interviews, examinations and tests, reliance on documents and records.

### **3-- The Difference Between Quantitative and Qualitative Methods:**

Having presented the most important information about quantitative methods in scientific research, we now turn to the main differences between these methods and qualitative methods. These differences are particularly evident in the following:

- In quantitative research, researchers prepare the questions they will ask in their interviews and questionnaires in advance. These questions are typically traditional, while in qualitative research, researchers rely on meticulous interactive observation or in-depth, objective personal interviews.
- Qualitative researchers employ analytical methods to interpret the phenomenon under study, whereas quantitative research relies on numerical and statistical methods.
- Quantitative studies aim to measure the research problem or phenomenon and analyze the research data and information in a way that allows for the generalization of the results. Qualitative studies, on the other hand, allow for understanding the phenomenon within the research framework, but the generalization of the results is not possible.
- In qualitative research, the sample is usually a purposive sample, chosen by the researcher based on what they believe will help them obtain sound results. In contrast, quantitative research involves randomly selecting individuals from the research population.
- In qualitative research, the researcher remains close to the research population or study sample. Furthermore, if observation is used, the researcher may even become involved in the research community without the participants' knowledge, in order to gather the necessary information and data.

- While quantitative research allows for laboratory work or questionnaires sent to respondents, obtaining their answers without direct or personal contact.
- In some cases, qualitative researchers may exhibit bias towards certain members of the study sample, whereas in quantitative research, researchers are bound by a pre-established research plan, free from any personal biases or inclinations.
- In quantitative research, researchers focus heavily on objective information and data, while qualitative research emphasizes past experiences and also incorporates subjective data and academic opinions relevant to the research problem.
- Qualitative research requires more time to analyze data than quantitative research requires collecting and analyzing data.
- Researchers use qualitative methods to describe various social phenomena, whereas quantitative research may focus on understanding social theories through in-depth study, culminating in the formulation of valuable, objective proposals. The following figure briefly summarizes the most important of these differences.

**Table.:** Differences between Qualitative and Quantitative Research

	<b>Qualitative Research</b>	<b>Quantitative Research</b>
<b>Focus</b>	Quality (features)	Quantity (how much, numbers)
<b>Philosophy</b>	Phenomenology	Positivism
<b>Method</b>	Ethnography/Observation	Experiments/Correlation
<b>Goal</b>	Understand, meaning	Prediction, test hypothesis
<b>Design</b>	Flexible, emerging	Structured, predetermined
<b>Sample</b>	Small, purposeful	Large, random, representation
<b>Data Collection</b>	Interviews, observation, documents and artefacts	Questionnaire, scales, tests, inventories
<b>Analysis</b>	Inductive (by the researcher)	Deductive (by statistical methods)
<b>Findings</b>	Comprehensive, description detailed, holistic	Precise, numerical

**Source:** updated from MBAH IVO FON,(2018).

### 13- The Theoretical Background of the Study

The theoretical background of a research study is the conceptual and scientific framework upon which the researcher bases their study. It includes a presentation and analysis of relevant theories, concepts, and scientific approaches to the research problem. The theoretical background aims to situate the study within its scientific context, highlight the development of key concepts, and define the relationships between the variables under investigation.

**Theory**, as a commonly used scientific term, differs in meaning from some terms that share the same semantic field, such as the term viewpoint, opinion, or trend. Theory is more accurate and truthful, and it has developed through the techniques of science or through a developed logic that follows strict rules in this regard, unlike other terms. Theory has a constructive role in the development of knowledge, while other concepts do not have this role (Bouchamp, 1987, 25). Kaplan defined it as: “Theory is the method of doing something meaningful to a situation that is hindering progress, so that it allows us to very effectively form and modify habits, and perhaps get rid of some of them, and replace them with new ones as the situation requires it” (Saada and Ibrahim, 2016, 391). Theory can be used in research in many ways. It can be used to help craft, develop, and guide research questions. It can help decide what data you want to capture. It aids in the interpretation and analysis of findings, and it can help to explain the phenomena of interest (Reeves , lbert , Kuper , et al, 2008).

Theory is a fundamental element of scientific research, providing explanation, understanding, and meaning. Scientific research without theory is less precise in defining the relationships between variables and data. Regardless of the field of study, a theory should clarify these relationships from the outset, helping to

predict outcomes and identify unexplored areas of research. Theory forms the link between the abstract and the concrete, ultimately leading to meaningful applied research from the initial planning stages to the final results.

There is a strong relationship between **theory** and **methodology**. If theory serves as a guiding framework for methodology, then methodology works to develop the theory, verify its validity, or reformulate it to align with new realities and enhance its capacity for understanding, explanation, and prediction. Thus, theory remains in a state of ongoing dialogue and interaction with methodologies and scientific research tools and methods in general. All this activity contributes to the development of scientific research and lends credibility to theories and methodologies, enabling them to approach phenomena, uncover their various complexities, and understand their relationships.

1- **Characteristics of a Scientific Theory:** The most important characteristics of a scientific theory are:

- **Reliance on scientific facts and laws:** As previously mentioned, scientific facts and laws are considered certain and definitively true, unlike hypotheses and theories, which are speculative. Therefore, what distinguishes a scientific theory from a hypothesis is that the hypothesis relies on scientific laws and does not contradict established facts.
- **Subjectivity to criticism and testing:** Theories must always be subject to correction and modification. Karl Popper expressed this characteristic, saying: "Any theory that cannot be refuted by any conceivable event is unscientific. The inability to be refuted does not indicate the strength of a theory, but rather its weakness."
- **Applicability:** In addition to clarity and simplicity, a theory gains popularity the more comprehensive it is and the more it can encompass, understand, and explain multiple phenomena. A theory is not a fixed

ideology but a tool that evolves and is refined through continuous use and constant testing of its hypotheses as it performs the processes of discovery and explanation (Bouleriabe, 2025).

### ***2- Criteria for Selecting a Theoretical background in Scientific Research:***

There are several criteria that must be met when selecting a scientific theory for research, which the researcher must follow. These include:

- The ideas, principles, and concepts of the theory should be coherent and integrated, ensuring that its content aligns with the research objectives.
- The theory should express a clear, focused, and systematically and logically sequenced idea or set of ideas or principles.
- The validity of a theory is relative, not absolute, and is subject to change and modification according to evolving objective circumstances and factors that determine its strength and content.
- A theory in scientific research must uniquely explain the facts it encompasses. The existence of another theory explaining the same facts weakens the scientific significance of both theories.
- The theory must be realistic in its explanation of facts and phenomena, based on empirical observations and studies, and it must be amenable to scientific testing, which grants it scientific legitimacy.

### ***3- The Relationship Between Theory and Scientific Research:***

The relationship between theory and scientific research is complementary. Research cannot be conducted without theory, as they are two sides of the same coin. Researchers can benefit from theories in their scientific research

through sound, scientific guidance and by adopting the scientific method that suits the nature of their research and study.

Theory also helps provide researchers with scientific hypotheses and guides them to scientific references and sources that are relevant to their research problem and the phenomenon under study. It can be said that theory is an integral part of the scientific research process. It is a complementary and interdependent relationship; one cannot rely on theory without research, nor can one rely on research without theory.

The researchers in any field of study have to initiate their research from theory in the respective fields of study. The study of theory provides a background for the study and thereafter guides in every stage of research. The data or numerical numbers may be part of research but they alone cannot satisfy research requirements. On the other hand, the theoretical explanation for such data or numerical numbers gives wholesomeness to research. Hence, theory cannot be excluded in every part of research. This is being emphasized, because in recent years, the researchers, by utilizing statistical software, are giving more importance to numerical data / numbers without giving theoretical explanation or interpretation to the data which they utilized in their research.

## 14-Ethics in Research

Scientific research in all fields requires a set of ethical values and principles. Researchers must be familiar with these standards and values to protect their rights from any harm. It is a mistake to think that the research process is limited to understanding a set of principles and procedures related to defining the problem, preparing the research design, collecting and statistically processing data, and writing research reports. Rather, there is a set of ethical standards that accompanies each of these stages. Research ethics requires respect for the rights, opinions, and dignity of others, whether they are fellow researchers, research participants, or research subjects. The principles of research ethics generally embrace the values of "positive action" and "avoiding harm," and these two values should be the cornerstone of ethical considerations throughout the research process.

### **1- The Concept of Research Ethics:**

Ethics is a form of human consciousness based on regulating and organizing human behavior in all areas of social and intellectual life without exception: at home with family and in interactions with others, at work, in academia, and in public spaces. (Guide to the Ethics of Scientific Research, Faculty of Science, Mansoura University). Since ancient times, every nation has strived to have values and principles that it cherishes, works to perpetuate, and adapts to new developments. These values are instilled, taught, and disseminated, and it is customary and legally imperative that they not be transgressed or violated

Research ethics is a branch of ethics that aims to uphold all ethical ideals and principles, while avoiding fraud, plagiarism, falsification of information, and anything that undermines the integrity of scientific research.

Constructing high-quality scientific research requires confidence in the research content and its findings (Brachant,2006). This necessitates full adherence to all research ethics and the qualities that researchers should possess. This leads to significant scientific studies that play a vital role in disseminating reliable and accurate data, information, and results, which have a profound impact on the development of science and society.

According to Maurice Angers (1996), scientific ethics expresses: a set of principles such as moral duties related to the nature of research activity.

Therefore, adhering to research ethics is essential for all researchers and students. Violating these ethics will have extremely negative consequences for scientific research in general and for the researcher in particular.

According to the Declaration of Helsinki (1983) and the World Federation of Ethics, the principles are:

1. Respect for persons (respect for the autonomy of those with legal capacity and protection of those incapable of such autonomy).
2. Benefit (the duty to do good).
3. Non-harm (the duty to refrain from causing harm).
4. Justice.

**-Who is responsible for upholding ethics in scientific research?**

- 1- The researcher: bears full responsibility.
- 2- Scientific research institutions: are responsible for the research conducted within them and must have ethics committees to oversee it.
- 3- Editors of scientific journals: research must be accompanied by approval from the ethics committee of the scientific institution.
- 4- Funding agencies and organizations: funding should only be provided after guarantees are given that the research adheres to ethical principles.

In the same context , the efforts of the Arab League Educational, Cultural and Scientific Organization (ALECSO) in the field of scientific research ethics ([www.alecso.org](http://www.alecso.org), 2025) began with the establishment of the “Arab Committee for Ethics in Science and Technology” in 2003. In December 2013, ALECSO endorsed the Aden Declaration and launched the “Arab Network for Ethics in Science and Technology” to achieve several objectives, including raising awareness of scientific ethics and contributing to a unified Arab perspective on this subject.

In Algeria, there are three types of bodies that oversee scientific matters: the National Council for Health Sciences Ethics, the Council of University Professional Ethics, and the ethics committees in higher education institutions.

## **2- Characteristics of a Scientific Researcher:**

These are criteria that are available in the researcher, including the ability to develop and adapt, and are embodied in:

### **2.1- The researcher's scientific qualifications:**

A researcher must be scientifically qualified and possess the necessary level of expertise to engage in scientific research, both methodologically and substantively. This requires a broad understanding of the research topic through the accumulation of quantitative and qualitative information. This is achieved through careful and continuous reading of numerous references and sources, rather than resorting to them only when absolutely necessary—a practice generally lacking in our society (Taybi, 2023). A true scientific researcher constantly strives to expand their knowledge, broaden its scope, and strive to increase the number of those who benefit from their expertise as much as possible. This cultivates in the researcher what is known as scientific competence, specific to their field. This competence enables them to organize and analyze ideas, and to counter one idea with another, and one argument with its counterpart. This, in turn, generates the crucial element of scientific thinking.

## **2.2 Social responsibility:**

Researchers must work from this perspective, and their research should be directed towards solving the problems of society, and society entrusts them with this aspect. Therefore, they must be accurate and credible in all their endeavors. Social responsibility and the readiness to be held accountable for their actions and words are among the greatest virtues that a researcher should possess, and this can only be achieved through a deep understanding of their professional duty.

## **2-3The Researcher's Ability to Endure Hardships:**

Many research projects, such as dissertations, require continuous, and sometimes lengthy, searches for the necessary information sources.

Similarly, many require extensive reviews, sometimes conducted by the institutions involved in the research or data collection. Researchers may find it difficult to facilitate these procedures and respond appropriately for various reasons. Therefore, a successful researcher needs the ability to cope with, overcome, and confront these challenges intelligently, patiently, and collaboratively. (Qandilji, 1999) .

## **2-4Confidentiality and Anonymity**

Confidentiality in social research involves researchers not disclosing any personally identifiable information that could lead to others identifying research participants. Confidentiality also requires careful data management (i.e., storing data securely and separating personally identifiable information from other data) and ensuring that all individuals with access to any personal information adhere to the same standards (e.g., research team members and content transcribers).

Data anonymization is a step researchers take to help protect the identities of research participants by concealing any personally identifiable information. It is a powerful tool for reducing the risk of harm to individuals. The risk analysis

should consider the strength of anonymity, as well as whether community-level data could lead to a risk of harm (to individuals or ethnic groups).

#### **2-5 Neutrality and objectivity:**

High-quality academic research can only be achieved if the researcher adheres to neutrality and objectivity, and avoids personal biases and opinions, especially during the study discussion and presentation of results. These conditions can be considered among the most important ethics of scientific research and the qualities that a researcher should possess.

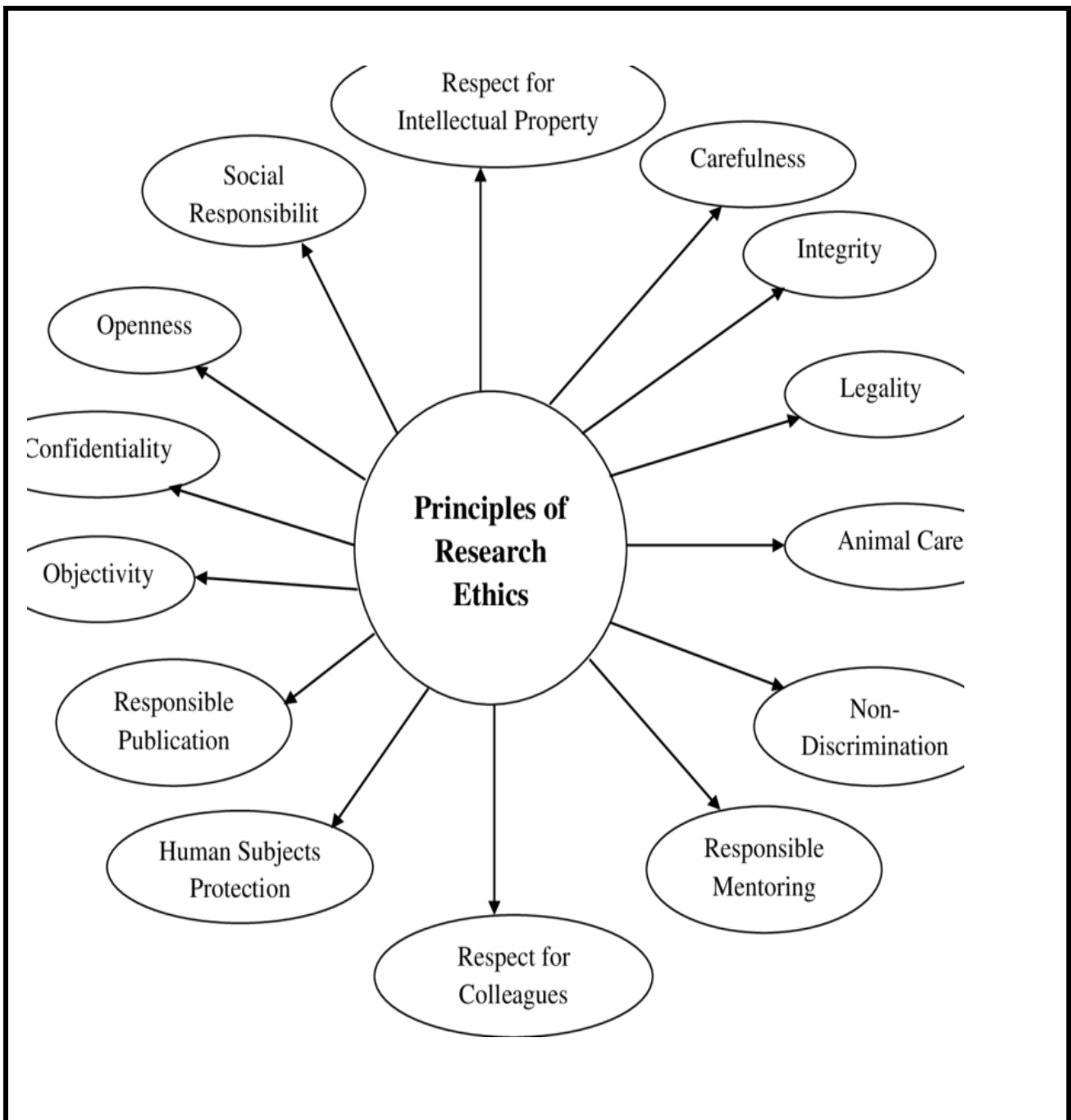
#### **2-6 Humility and Acceptance of Scientific Criticism:**

A scientific researcher must approach their discussion, critique, or presentation of previous research with humility, avoiding disparagement of any previous researcher or author. They must also treat the study sample and research participants with humility and be open to constructive scientific criticism. Scientific research is a trust placed upon the researcher, who observes it accurately and describes it objectively, where it is observed, recorded, or documented, and announces its results as they are when measured.

#### **2-7 Respecting Intellectual Property and the Efforts of Others:**

Scientific work relies heavily on sources, references, and previous studies. This necessitates that researchers adhere to numerous standards and conditions at every stage.

In this context, researchers are expected to avoid all forms of plagiarism and academic theft. The ethics of scientific research and the standards of a researcher require any graduate student or researcher to properly and academically document all sources and references in their research.



**Figure :** Principles of Research Ethics.

**Source:** Noushad Husain.(2020). Research Ethics: A Path to Making Responsible Conduct of Research, Volume 14, issue4 ,School of Education and Training Maulana Azad National Urdu University, Hyderabad.

***3- The importance of training in scientific research ethics for new researchers()***

According to Dr. Ibrahim Al-Mazyani (<https://ehsae.com>, 2025), training in research ethics is a pivotal element in preparing new researchers, as it

contributes to building ethical and professional awareness that guides their scientific practices from the earliest stages of their research careers. This training fosters a culture of responsibility and transparency and reduces research violations that could negatively impact the credibility of scientific knowledge. The following outlines the most important aspects of this training:

- Establishing Ethical Principles from the Beginning of the Academic Path

Training helps instill concepts of integrity, honesty, and respect for research participants from the outset, thus preventing researchers from engaging in unethical practices stemming from ignorance or misjudgment.

- Preventing Plagiarism and Common Research Errors plagiarism is one of the most serious academic challenges. Early training helps familiarize new researchers with its risks and how to avoid it through proper documentation, legitimate citation, and the use of plagiarism detection tools.
- Developing the researcher's awareness of their responsibility towards participants the training enhances new researchers' understanding of the standards related to protecting the privacy of individual participants, obtaining informed consent, and treating vulnerable groups with respect, thus ensuring full adherence to research ethics.
- Enhancing the quality and credibility of research outputsthe greater the researchers' awareness of research ethics, the more accurate the research design and the quality of its results. Honesty in presenting and analyzing data increases the value of the research and earns it the trust of the scientific community.
- Preparing the researcher to deal with research ethics committees many universities and research institutions require ethical approvals before conducting studies, especially those involving human subjects. The

training prepares researchers to understand these standards and submit comprehensive ethical documentation.

- Building a professional reputation based on credibility early commitment to research ethics, resulting from the training, contributes to building a positive professional reputation for the researcher within their academic community and supports them when publishing or applying for projects and grants.
- Preparing Researchers to Lead Research Teams Later new researchers who receive training in research ethics are later qualified to mentor students or research teams, thus fostering a culture of ethical and responsible research at the institutional level.
- Reducing Legal or Institutional Risks training helps researchers avoid violations that could result in academic or legal penalties, such as publishing unverified data, disparaging study communities, or infringing on intellectual property rights.

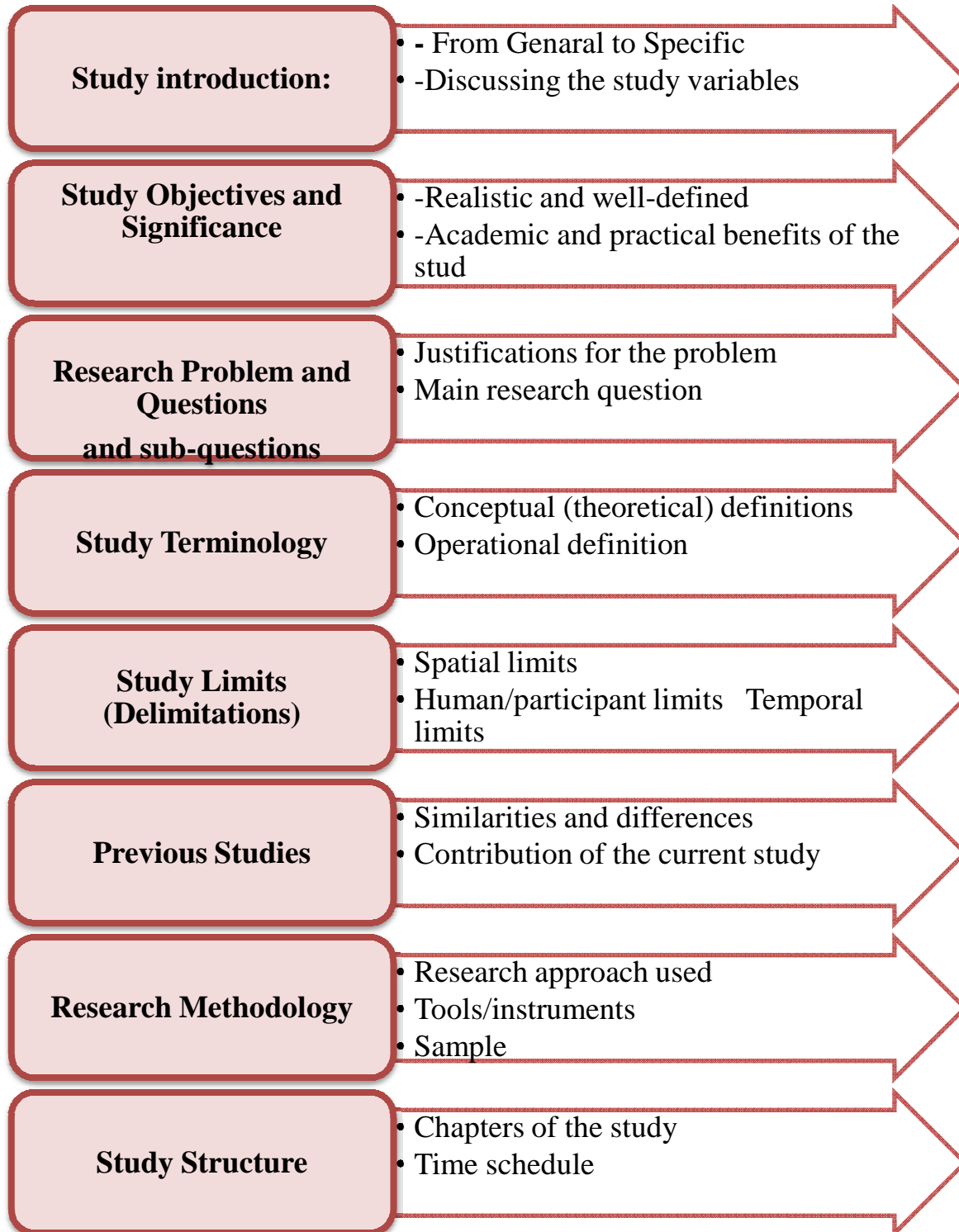
#### **4- Research ethics in the digital age and artificial intelligence:**

In the digital age, scientific research faces new ethical challenges due to the widespread availability of information and the proliferation of digital platforms. Respecting privacy and protecting personal data has become a primary concern, especially when collecting information from social media networks or digital databases (Johnson, 2020). Additionally, ensuring scientific integrity is crucial in confronting issues such as electronic plagiarism or the manipulation of results using artificial intelligence tools (Smith & Lee, 2021). Researchers are therefore required to adopt strict ethical practices, including transparency in research methodology, accurate citation of sources, and informed consent from participants, as well as promoting social responsibility toward the communities their research serves (Brown et al., 2019). Attention to research ethics in the digital environment is not merely a regulatory obligation but a cornerstone for maintaining the credibility of science and public trust in modern knowledge

(Anderson, 2022). Researchers must therefore adhere to robust ethical standards, including transparent reporting of AI methodologies, rigorous validation of algorithms, accountability for automated decisions, and responsible data management (Jobin, Ienca, & Vayena, 2019). Upholding research ethics in the era of AI is essential not only for the credibility of scientific knowledge but also for maintaining public trust in technology-driven research.

In conclusion, a love of scientific research, coupled with the researcher's interest and intellectual engagement, necessitates a relationship between the two. This relationship must be complementary, as the researcher possesses qualities, abilities, experience, and scientific ethics derived from their knowledge of the principles of scientific research, the nature of the theory, and the knowledge upon which this research is based.

## *Research Plan Flowchart*



## *Conclusion*

In conclusion, this academic publication highlights that scientific research in the university context in general, and in the field of media and communication studies in particular, requires individual practice while drawing upon the texts and ideas of others to support one's perspective. This is because the methodology of scientific research consists of organized steps followed by the researcher when studying a specific phenomenon or scientific problem. Through these steps, the researcher can arrive at precise scientific results that contribute to solving the phenomenon or problem under investigation

The researcher begins by formulating the essential or priority elements in the introduction. This includes defining the topic in terms of its basic components and general framework, then specifying its importance within the field of specialization, followed by its objectives and a clear and specific formulation of its problem. The researcher then outlines the methodology(s) used in the study and the accompanying tools. Following this, the researcher includes other complementary elements, such as referencing previous studies and key concepts, culminating in the main divisions of the topic.

Further details concerning the methodological aspect, in its broader form, are covered by students in the course on preparing their graduation dissertation.

## **Bibliography:**

### **Arabic References (Translated to English):**

1. Academy of the Arabic Language. (2004). *Al-Mu`jam Al-Wasīf* (4th ed.). Al-Shorouk International Library.
2. Al-Awawdeh, A. S. (2002). *Steps of scientific research: Training course for field-survey volunteers*. University of Jordan, Community Service Office.
3. Alian, R. M. (2001). *Scientific research: Its foundations, methods, techniques, and procedures*. Amman: International House of Ideas.
4. Al-Jarjawi, Z. B. A. B. M. (2010). *Methodological educational rules for questionnaire construction* (Research Tools Series, Book 1, 2nd ed.). Gaza: Press.
5. Al-Khouli, U. A. (2010). Modern trends in educational research. *Journal of the Faculty of Education in Suez*, 1, 1–13.
6. Almaany Dictionary. (2019). *Almaany comprehensive dictionary*. Retrieved June 18, 2019, from <https://www.almaany.com>
7. Al-Rubaie, H. (2015). *Principles of statistics and probability*. University of Baghdad.
8. Al-Saati, H. (1982). *Design of social research: A new methodological system*. Dar Al-Nahda Al-Arabia.
9. Angers, M. (1997). *Initiation to social science methodology*. Casbah University.
10. Angers, M. (2004). *Methodology of scientific research in the humanities* (Trans. by a group of researchers). Dar Al-Qassaba Publishing.

11. Beauchamp, G. (1987). *Curriculum theory* (M. M. Suleiman et al., Trans.). Cairo: Arab House for Publishing and Distribution.  
(Original work published in Arabic translation)
12. Ben Marsli, A. (2007). *Methods of scientific research* (3rd ed.). University Publications.
13. Deliou, F., & Gharbi, A. (2012). *Foundations of methodology in social sciences*. Laboratory of Sociology of Communication, University of Mentouri, Constantine.
14. Issa Taybi. (2023). Ethics of Scientific Research - Researcher Ethics and Research Characteristics, *Journal of Legal and Social Sciences*, Volume 8, Issue 2, Algeria.
15. Gharbi, A. (2009). *Basics of methodology in writing university theses*. Laboratory of Sociology of Communication, Constantine.
16. Ismail, S. (1994). *Basic principles of scientific research* (1st ed.). Al-Risalah Publishing.
17. Jaafar, K. H. (2019). *The scientific problem and methods of identifying it*. University of Babylon. Retrieved June 20, 2019, from <http://www.uobabylon.edu.iq>
18. Joudah, A. A. (2007). *Scientific research methods: Concepts, tools, and statistical methods*. Amman, Jordan: Dar Al-Thaqafa for Publishing and Distribution.
19. Qandilji, Amer. (1999). *Scientific Research as a Use of Information Sources*. (1st ed.). Amman: Dar Al-Yazkar Scientific Publishing and Distribution.
20. Khidr, A. I. (2013). *Preparing scientific research and theses: From idea to conclusion*. Al-Azhar University.
21. Maatouk, F. (1985). *Methodology of social sciences among Arabs and in the West*. University Foundation for Studies, Publishing and Distribution.

22. Mahjoub, W. (2005). *Principles of scientific research and its methods* (2nd ed.). Amman: Dar Al-Manahij for Publishing and Distribution.
23. Qassem, A. (2017, June 5). The importance of feeling and sensing the scientific research problem and its sources. *Journal of Education and Culture*. Retrieved May 12, 2019, from <http://al3loom.com>
24. Saadeh, J., & Ibrahim, A. (2016). *The contemporary school curriculum* (8th ed.). Amman: Dar Al-Fikr.
25. Saati, H. (1982). *Design of social research: A new methodological system*. Dar Al-Nahda Al-Arabia.
26. Ubaidat, D., et al. (1984). *Scientific research: Its concept, tools, and methods*. Amman: Dar Al-Fikr.
27. Report of the Founding Meeting of the Arab Committee for Ethics in Science and Technology, dated August 26, 2003 .Available on the Arab Network for Ethics in Science and Technology website (accessed December 20, 2025), Link: [https://www.alecso.org/anest/files/upload/report\\_2.pdf](https://www.alecso.org/anest/files/upload/report_2.pdf)

### **French / English References (Original):**

14. Beaud, M. (1985). *L'art de la thèse*. Éditions La Découverte.
15. Le Coadic, Y.-F. (1994). *La science de l'information*. Presses Universitaires de France.
16. Van Campenhoudt, L., & Quivy, R. (1995). *Manuel de recherche en sciences sociales*, Paris, 2ème Édition, Éd. Dunod, P. 22.

### **English References:**

1. Alves, A. M. A., Pessoa, M., & Salviano, C. F. (2015). Proposal for a framework for quality measurement to the SPB – Brazilian Public Software. *Business Process Management Journal*, 21(1), 100–125.

2. Andrade, C. (2020). The inconvenient truth about convenience and purposive samples. *Indian Journal of Psychological Medicine*, 43.  
<https://doi.org/10.1177/0253717620977000>
3. Alon, U. (2009). How to choose a good scientific problem. *Molecular Cell*. <https://doi.org/10.1016/j.molcel.2009.09.013>  
PDF available at:  
<https://www.weizmann.ac.il/mcb/UriAlon/sites/mcb.UriAlon/files/upload/s/nurturing/howtochoosegoodproblem.pdf>
4. Brace, I. (2008). *Questionnaire design: How to plan, structure and write survey material for effective market research* (2nd ed.). Kogan Page.
5. Brashant v Kaman .( 2006) .*research ethics* , Presented in the Symposium on Scientific Publishing, ACS National Meeting, Atlanta, GA March 2006
6. Bryman, A. (2016). *Social research methods* (5th ed.). Oxford: Oxford University Press.
7. Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (8th ed.). London: Routledge.
8. Edmunds, S., & Brown, G. (2010). *Doing pedagogical research in engineering*. Loughborough: Loughborough University.
9. Elfil, M., & Negida, A. (2017). Sampling methods in clinical research: An educational review. *Emergency (Tehran, Iran)*, 5, e52.  
<https://sid.ir/paper/339768/en>
10. Fowler, F. J. (2014). *Survey research methods* (5th ed.). Sage Publications.
11. Gravetter, F., & Forzano, L. (2012). Selecting research participants. In *Research methods for the behavioral sciences*.
12. Kerlinger, F. N. (1986). *Foundations of behavioral research* (3rd ed.). Holt, Rinehart and Winston.
13. Krueger, R. A. (2002). *Designing and conducting focus group interviews*. Minneapolis: University of Minnesota.

14. Mbah Ivo Fon. (2018). *Disposal of e-waste: Case study of the University of Bamenda* (Unpublished master's dissertation). University of Bamenda, Cameroon.
15. Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). London: Sage Publications.
16. Perumal, T. (2010). *Research methodology*. Retrieved from [https://www.tankonyvtar.hu/hu/tartalom/tamop412A/2011-0021\\_22\\_research\\_methodology/CMRM6103\\_Research\\_methodology\\_09.pdf](https://www.tankonyvtar.hu/hu/tartalom/tamop412A/2011-0021_22_research_methodology/CMRM6103_Research_methodology_09.pdf)
17. Reeves, S., Albert, M., Kuper, A., & Hodges, B. D. (2008). Why use theories in qualitative research? *BMJ*, 337, a949. <https://doi.org/10.1136/bmj.a949>
18. Shank, G. (2002). *Qualitative research: A personal skills approach*. New Jersey: Merrill Prentice Hall.
19. Suresh, K., Thomas, S. V., & Suresh, G. (2011). Design, data analysis and sampling techniques for clinical research. *Annals of Indian Academy of Neurology*, 14.
20. Teddlie, C., & Yu, F. (2007). Mixed methods sampling: A typology with examples. *Journal of Mixed Methods Research*, 1, 77–100. <https://doi.org/10.1177/2345678906292430>

<b>Table of Contents</b>	<b>Page</b>
<b>1- Course Description.</b>	<b>02</b>
<b>2- Course Structure.</b>	<b>03</b>
<b>3- General Introduction.</b>	<b>04</b>
<b>4- Introduction to Scientific Research</b>	<b>06</b>
<b>5- Criteria for Selecting a Good Research Topic..</b>	<b>14</b>
<b>6- Specifications for determining the suitability of a topic for study.</b>	<b>18</b>
<b>7- Formulating the research problem</b>	<b>21</b>
<b>8- Formulating research Sub-questions in scientific research.</b>	<b>26</b>
<b>9- Hypotheses: Types and Conditions for Their Formulation.</b>	<b>29</b>
<b>10- Conceptual Framework: Variables, Concepts, Indicators, and Dimensions.</b>	<b>36</b>
<b>11- The Methodology of Reviewing Previous Studies.</b>	<b>42</b>
<b>12- sampling techniques and types</b>	<b>48</b>
<b>13- Data Collection Tools: Interviews, questionnaires,</b>	<b>56</b>

<b>Observation.</b>	
<b>14- Data Analysis: Quantitative Methods</b>	<b>68</b>
<b>15- Data Analysis: Qualitative Methods .</b>	<b>75</b>
<b>16- The Theoretical Background in Scientific Research.</b>	<b>82</b>
<b>17- Ethics in Research.</b>	<b>86</b>
<b>18- Research Plan Flowchart .</b>	<b>95</b>
<b>19- Conclusion .</b>	<b>96</b>
<b>20- Bibliography .</b>	<b>97</b>