

III- The stages of scientific research:

Stage 1: Identifying the research Problem and Formulating the Title

- This is the first and most important step, and the starting point of any research.
- It begins when the researcher identifies a gap in knowledge, a real-world problem, or a phenomenon that needs explanation, needs to be studied or solved.
- The problem should be specific, measurable, and relevant.

Key questions to ask:

- What economic issue needs investigation?
- Why is this problem important?
- What are its possible causes and consequences?

✚ This phase involves preliminary reading to understand the existing literature and pinpoint a specific issue that hasn't been adequately studied. The researcher then narrows down this broad problem into a clear, focused, and researchable question. Based on this question, a concise and descriptive title is formulated to accurately reflect the research's scope.

1-1 Conditions that must be met in the Scientific Research Problem:

- 1. Feasibility of Data Collection:** The problem must be **researchable**, meaning relevant information and data are **accessible** and not overly ambiguous or difficult to obtain.
- 2. Availability of Expertise:** The chosen topic should have **specialized experts and supervisors available** to guide the researcher during the planning and execution phases.
- 3. Significance:** The problem must hold **actual research or societal importance**. The researcher should not invest effort into solving a trivial or insignificant issue.
- 4. Researcher Competence:** The problem must be **suitable for the researcher's knowledge, capabilities, and field of specialization**.
- 5. Cost Consideration (Financial Feasibility):** The researcher must consider the **financial budget (cost element)**, avoiding studies that require excessively large financial resources.
- 6. Scientific Interest:** The problem should have an element of **scientific excitement** to maintain the interest of the researcher and other experts in the same field.

1-2- Methods for Obtaining a Scientific Research Problem

There are several main avenues through which a researcher can identify and select a scientific research problem:

- 1. Real-Life Experiences (From Reality):**
 - Researchers can derive problems from **daily experiences, observations, and encountered difficulties** in real life.

- *Condition:* The problem must be **relevant to the researcher's field of specialization** (e.g., a social work researcher choosing the problem of street children).

2. **Theoretical and Practical Experiences:**

- This refers to issues and challenges encountered **within the researcher's specific field of study**, either during academic learning or while conducting scientific experiments and practical work.

3. **Previous Research (Prior Studies):**

- Existing research is a vast source where researchers can find gaps, limitations, or suggestions for future work.
- *Crucial Element:* The researcher must add an **innovative and creative component** to the existing material, using previous findings only as a **pivotal base** to introduce new contributions that serve science and society.

4. **Creative Abilities (Creative Capacities):**

- This method relies on the researcher's ability to **link the realistic with the conceptual (or imaginative)** elements of a phenomenon.
- This requires intense **experimentation and focused observation** on the subject of study.

1-3-Criteria for Evaluating a Scientific Research Problem

When a researcher submits a research proposal (thesis/dissertation) to the relevant supervisory bodies, the scientific research problem is evaluated according to several key criteria:

Novelty: Is the problem new, or has it been addressed in previous research?

Contribution: What is the specific value or addition that the problem offers to the body of scientific research?

Clarity/Specificity: Was the research problem defined in a clear and direct manner?

Generalizability: Can the results reached by the researcher be generalized to the study population?

Utility/Benefit: What is the practical or theoretical benefit contained within the research problem?

In essence, a strong research problem must be:

1. **Novel** (or offer a new angle to an old problem).
2. **Significant** (provide a valuable **contribution**).
3. **Clear** and well-defined.
4. Yield **generalizable** results.
5. Offer a measurable **benefit** or utility.

Example in Economics:

- **Problem:** A researcher observes that despite a country's consistent GDP growth, youth unemployment, particularly among university graduates, is rising.
- **Research Question:** What is the impact of the skills mismatch between higher education outputs and labor market demands on graduate unemployment in Algeria?
- **Proposed Title:** "The Impact of Skills Mismatch on Graduate Unemployment: An Empirical Study of the Algerian Economy (2015-2025)."

Stage 2: Formulating Hypotheses

2-1- Definition and Role of Hypotheses

Scientific research hypotheses represent the **expectations or educated guesses** put forth by the researcher concerning the study's problem. They serve as **preliminary and temporary answers** to the research questions.

The researcher then proceeds to **prove or disprove** these hypotheses using evidence and data throughout the research process. The final results of the study explicitly demonstrate the status of these hypotheses. In the research plan, hypotheses are positioned **after the problem definition**. It is **not necessary for hypotheses to be correct**; rather, they are merely **subjected to testing**, and the final conclusions of the research reveal their validity (positive or negative).

2-2 Conditions for Formulating Hypotheses

- **Cohesion and Consistency:** If the researcher sets more than one scientific hypothesis for the study problem, they must be **interconnected and free from contradiction**.
- **Operational Definitions:** If scientific terms are included in the hypotheses, the researcher must clearly provide the **operational definition** for those terms.
- **Avoidance of Untestable Concepts:** Scientific hypotheses must **completely avoid touching upon facts or religious beliefs** as these are **not subject to scientific testing**.

- **Clarity and Conciseness:** Hypotheses should be formulated in a **concise and expressive manner** that accurately reflects the scientific research methodology and **does not allow for alternative interpretations.**

2-3-Classifications of Scientific Research Hypotheses

A. Statistical Hypotheses: Statistical hypotheses are divided into two main types:

- **The Null Hypothesis :**
 - This is used by scientific researchers to **establish the absence of a relationship between variables.**
 - This is demonstrated using statistical measures and is often employed in **experimental scientific research.**
- **The Alternative Hypothesis :**
 - This clarifies the researchers' viewpoint regarding the **existence of a relationship between variables.**
 - It is used when the researcher aims to verify the rejection (negation) of the Null Hypothesis, consequently using the Alternative Hypothesis.

B. Research Hypotheses : Research hypotheses are also divided into two main types:

- **Directional Hypotheses:**
 - This type of research hypothesis directly represents the **relationship between the study variables.**

- Here, there is a dependent variable which changes in an **ascending or descending manner** according to what happens to the independent variable.
- *For example:* "The more money an individual acquires, the greater their demands become."
- **Non-Directional Hypotheses:**
 - This is used when there is some **ambiguity (uncertainty)** in the relationship between the independent and dependent variables, and the researcher does **not know the extent or specific direction of the relationship**.
 - *For example:* "There is a relationship between the presence of reptiles in the desert and rainfall." The objective of examining this relationship may even be to disprove its existence.
- **Example in Economics:**
 - **Hypothesis:** "There is a statistically significant negative relationship between the flexibility of university curricula and the rate of graduate unemployment."
 - **Hypothesis:** "Weak coordination between universities and private sector firms widens the gap between acquired skills and required skills in the labor market."

Examples :

1. Macroeconomics

Title: The Impact of Public Spending on Economic Growth in Algeria (2000–2023)

Research Question: To what extent does public spending contribute to economic growth in Algeria?

Research Gap: Few studies have analyzed this relationship in Algeria, especially after COVID-19.

Objectives:

- Analyze the trend of public expenditure and economic growth.
- Evaluate the relationship between public spending and GDP growth.
- Provide policy recommendations for efficient public spending.

Hypotheses:

H1: Public spending has a positive and significant effect on economic growth.

H0: There is no significant relationship between public spending and growth.

Methodology: Quantitative – econometric analysis using time series data (2000–2023).

2. Microeconomics

Title: The Effect of Energy Pricing on Consumer Behavior in Algeria

Research Question: How do changes in energy prices affect consumer decision-making in Algeria?

Research Gap: Limited empirical studies on Algerian consumer reactions to energy price reforms.

Objectives:

- Examine changes in household consumption patterns.
- Assess the elasticity of demand for energy products.

Hypotheses:

H1: Increases in energy prices reduce household energy consumption.

H2: Consumers adapt their behavior through substitution toward cheaper alternatives.

Methodology: Quantitative – household survey data and regression analysis.

3. Public Finance

Title: The Efficiency of the Tax System in Financing the State Budget

Research Question: Does the Algerian tax system effectively finance the budget while ensuring tax equity?

Research Gap: Few quantitative assessments exist on efficiency and fairness in Algeria's tax system.

Objectives:

- Analyze the structure of public revenues.
- Evaluate tax collection efficiency and equity.

Hypotheses:

H1: The Algerian tax system lacks efficiency in revenue collection.

H2: Tax fairness positively influences citizens' compliance.

Methodology: Mixed (quantitative + qualitative) – statistical analysis and expert interviews.

4. Finance and Banking

Title: The Impact of Financial Innovation on Banking Performance in Algeria

Research Question: How does financial innovation influence bank performance in Algeria?

Research Gap: Empirical evidence on the effect of digital banking innovations in Algeria is scarce.

Objectives:

- Identify types of financial innovations adopted by Algerian banks.
- Assess their impact on profitability and customer satisfaction.

Hypotheses:

H1: Financial innovation positively affects bank performance indicators.

Methodology: Quantitative – panel data analysis of banks' financial indicators.

5. Econometrics

Title: The Relationship Between Inflation and Unemployment in Algeria: Evidence from the Phillips Curve

Research Question: Is there a statistically significant trade-off between inflation and unemployment?

Research Gap: Lack of recent econometric validation of the Phillips curve post-2010.

Objectives:

- Test the applicability of the Phillips curve in Algeria.
- Examine the long-term and short-term dynamics between variables.

Hypotheses:

H1: There is an inverse relationship between inflation and unemployment in the short run.

Methodology: Quantitative – time series econometric model (e.g., ARDL, VAR).

6. Business Management

Title: The Role of Transformational Leadership in Enhancing SME Performance

Research Question: How does transformational leadership improve performance in SMEs?

Research Gap: Few studies explore leadership styles in Algerian SMEs.

Objectives:

- Identify key traits of transformational leadership in SMEs.
- Measure their effect on organizational performance.

Hypotheses:

H1: Transformational leadership positively affects employee motivation and performance.

Methodology: Quantitative – structured questionnaire and statistical analysis (SPSS).

7. Marketing

Title: The Impact of Digital Marketing on Algerian Consumer Behavior After COVID-19

Research Question: How has digital marketing changed consumer behavior post-pandemic?

Research Gap: Lack of long-term studies on post-COVID consumer digital behavior in Algeria.

Objectives:

- Explore the influence of digital ads and social media on buying decisions.
- Analyze consumer trust and engagement online.

Hypotheses:

H1: Digital marketing significantly influences purchase intentions.

Methodology: Quantitative – online survey and descriptive analysis.

8. International Economics

Title: The Effect of Foreign Direct Investment on Economic Development in Algeria

Research Question: Does FDI contribute to sustainable economic development in Algeria?

Research Gap: Most studies focus on investment volume, not quality or sustainability.

Objectives:

- Analyze the trend of FDI inflows in Algeria.
- Assess FDI's role in technology transfer and job creation.

Hypotheses:

H1: FDI positively affects economic growth and employment.

Methodology: Quantitative – econometric model using World Bank data.

9. Industrial Economics

Title: The Impact of Start-Up Support Policies on Industrial Sector Development in Algeria

Research Question: To what extent do start-up support programs contribute to industrial growth?

Research Gap: Most studies focus on services or tech sectors, not on industrial start-ups.

Objectives:

- Evaluate the effectiveness of government programs for start-ups.
- Examine their contribution to industrial innovation and competitiveness.

Hypotheses:

H1: Support programs have a positive effect on industrial performance.

Methodology: Mixed – interviews with start-up founders + analysis of industrial data.

10. Development Economics

Title: The Role of Renewable Energy in Achieving Sustainable Development in Algeria

Research Question: How can renewable energy contribute to sustainable development?

Research Gap: Few recent studies connect renewable energy with SDGs in Algeria.

Objectives:

- Assess renewable energy's contribution to economic growth and environmental protection.
- Identify barriers to the adoption of renewable technologies.

Hypotheses:

H1: Renewable energy development positively affects sustainability indicators.

Methodology: Quantitative – correlation analysis using secondary data (energy, GDP, CO₂).