

منهجية بناء الإشكالية وصياغة فرضيات البحث العلمي

The Methodology of Formulating Research Problem and Hypotheses

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المخلص:

يتفرد البحث العلمي بنهج خطوات غاية في الأهمية تضمن إعداده بصورة سليمة وفعالة، ومن أبرز هذه الخطوات نجد بناء إشكالية قوية منهجيا ومعرفيا وصياغة فرضيات بحثية مناسبة، حيث تجمع كل من الإشكالية والفرضية علاقة ترابط وثيقة، فكل منهما مقومات علمية، لذا إذا تخلف أحدهما نقصت القيمة العلمية للبحث العلمي. تطرح الإشكالية خلافا أو غموضا ما حول موضوع ما، يجب الإجابة عنه، وتعتبر صياغة الفرضيات من المراحل الأساسية، حيث تتمثل في إجابات مبدئية أو متوقعة للإشكالية المطروحة، من خلال البحث يتم اختبار صحة الفرضيات لإثباتها أو ضحدها. هذه الورقة البحثية جاءت للإحاطة بمقومات أهم الركائز واللبات التي ينهض عليها البحث العلمي، لأن كل ما يتوصل إليه الباحث من نتائج هو انعكاس لمدى دقة بناء الإشكالية وحسن اختيار الفرضيات.

الكلمات المفتاحية: العلم - البحث العلمي - الإشكالية - الفرضيات - المنهجية العلمية.

Abstract:

Scientific research is characterized by following highly important steps that ensure its preparation in a sound and effective manner. Among the most prominent of these steps are the construction of a strong methodological and epistemological problem statement and the formulation of appropriate research hypotheses. There is a close correlation between the problem statement and the hypothesis, as each has scientific components. If either is lacking, the scientific value of the research diminishes. The problem statement addresses a certain defect or ambiguity regarding a particular topic that needs to be answered. The formulation of hypotheses is one of the essential stages, representing initial or expected answers to the posed problem. Through research, the validity of the hypotheses is tested to either confirm or refute them. This research paper aims to encompass the essential components and foundations on which scientific research is built, as the results reached by the researcher reflect the accuracy of the problem statement construction and the proper selection of hypotheses.

Keywords: Science, Scientific Research, Problematics, Hypotheses, Scientific Methodology

Introduction:

Scientific research has become the hallmark of the modern era, as its importance has become clear as the fundamental pillar for scientific, cultural, and human progress. Scientific research represents the means by which we can reach the truths of phenomena and find the relationships that connect them, thus achieving an accurate, objective understanding, analyzing, and interpreting these phenomena. The process of conducting scientific research is similar to a cohesive and sequential structure, where its components influence each other. Scientific research derives its rigor from an integrated and precise system of methodologically and cognitively structured steps. Formulating the research problem is the decisive and one of the most complex stages that a researcher goes through after choosing the title. Hypotheses also play a pivotal role in examining the research problem. The impact of the problem and hypotheses is significant in all subsequent steps, such as determining the type and plan of the study, its tools, the nature of the scientific method, and the type of data required¹.

The problem presented in this context is as follows: What are the most important scientific components that govern both the problem and the hypotheses?

I. Scientific Components for Formulating the Problem.

1. Concept of the Research Problem.

The concept of research problematics is diverse, and its meanings vary according to different scientific perspectives and scholars' orientations. Among the various concepts of research problematics, we include the following:

¹ Saber, Fatima Awad, and Mirqut Ali Khafajah (2007). Foundations and Principles of Scientific Research. Alexandria: Maktabat wa Matba'at al-Ish'a' al-Faniyah. p. 12.

- Problematics is an approach or theoretical conception adopted to address the proposed problem¹.
- According to the philosophical dictionary, problematics is the theoretical or practical dilemma that is resolved with a definitive solution².
- Some researchers suggest that the best way to define problematics is to formulate it as a question that clarifies the relationship between two or more variables. However, a researcher can also define the problematics without presenting it as a question.

Problematics distinguish themselves from problems in terms of depth and complexity. Problems are associated with relatively simple or moderately complex phenomena and often have definitive solutions. In contrast, problematics relate to social, psychological, and educational phenomena, and their solutions are usually temporary due to their evolving and dynamic nature.

2. Importance of Problematics in Scientific Research.

Problematics in research serve as the primary compass guiding and directing the researcher during the writing process. They help the researcher focus on the research topic, understand it comprehensively, and confine it to relevant variables, thereby avoiding digression from the core subject. Formulating problematics is one of the fundamental research steps that define the framework and methodology of the study. When a researcher scientifically formulates the problematics, understands it, and comprehends

¹ Gharib, Abd al-Karim (2012). Scientific Research Methodology in Education and Humanities. Casablanca: Dar Alam al-Tarbiya. p. 141.

² Salibiya, Jamil (1982). The Philosophical Dictionary. part 2. Beirut: Dar al-Kitab al-Lubnani. p. 379.

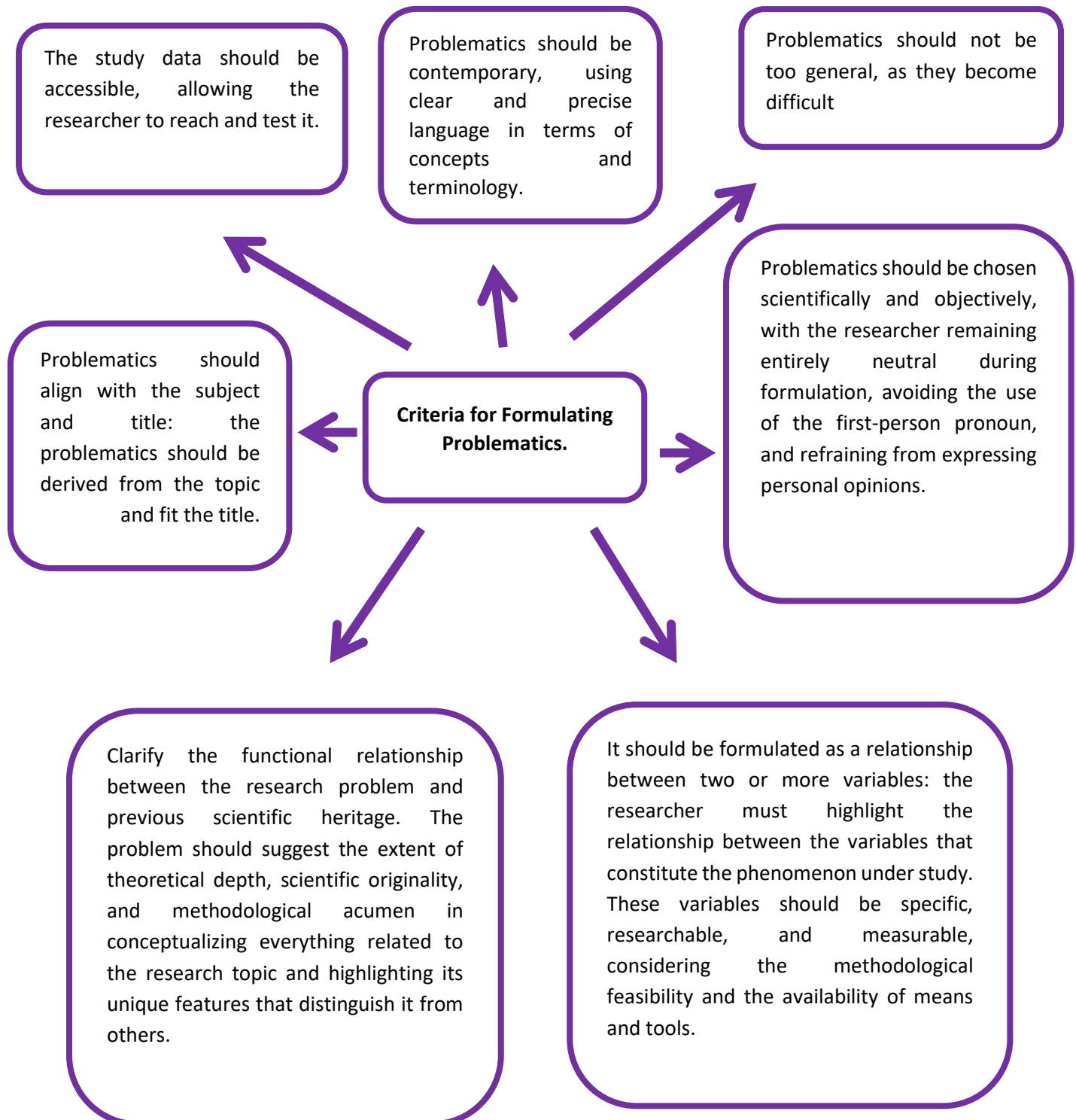
the relationships between its variables, it becomes easier to interpret and analyze, leading to accurate results. Experts emphasize that accurately selecting and defining research problematics from the start is often more challenging than finding solutions because the precision of research problematics depends on factors such as¹:

- The type of study the researcher can accomplish.
- The researcher's ability to control the methodology on which the research is based.
- The compatibility of the adopted methodology with the nature of the research.
- The importance and availability of tools to conduct the research and the possibility of utilizing them.

¹ Al-Sharif, Abd Allah Muhammad (1996). Research Methods: A Student's Guide to Writing Scientific Research Papers and Theses. Al-Ishaa Library for Printing, Publishing and Distribution - Alexandria, First Edition. p. 35.

3. Criteria for Formulating Problematics.

Formulating problematics requires adhering to several scientific considerations, which include:



4. Sources for Constructing a Research Problematics.

Precisely defining the research problem requires experience, knowledge, and understanding from the researcher, which are acquired through scientific practice and in-depth reading of studies conducted on the subject or directly or indirectly related to it¹.

Researchers and those interested in the field of scientific research have identified numerous sources from which a researcher can derive their research problematics, including:

- **Field of specialization and expertise:** The deeper and more comprehensive the researcher's expertise, the better they can understand the field of research problematics and identify its various dimensions. A researcher who specializes and delves deeply into a specific area can adopt aspects that need research and identify unclear or disputed areas among researchers to study them in depth².
- **Field experience and postgraduate training programs provided by the university to student researchers:** These are among the most important sources for defining and constructing a research problem³.
- **Continuous and ongoing review of scientific sources and references:** This helps in formulating the research problem, including:

¹ Al-Khidhiri, Mohsen Ahmad, and Muhammad Abd al-Ghani. (1992), Scientific Foundations for Writing Master's and Doctoral Theses. First Edition, Cairo: Maktabat al-Anglo Misriya. p. 21.

² Shafiq, Muhammad (1983). Scientific Research: Methodological Steps for Preparing Social Research. al-Matba'ah al-'Asriyah, Alexandria. p. 24.

³ Hesham, Hassan (2007). Scientific Research Methodology. Graphic Arts Printing Press, Djelfa. p. 93.

- ✓ Previous specialized studies and printed works from conferences and scientific meetings in the field.
- ✓ Articles, reports, and specialized statistics related to the subject.
- ✓ Personal communications with specialized experts and the experience of the supervising professor.

II. Scientific Components for Formulating Research Hypotheses.

After discussing the nature, importance, conditions, and sources of formulating research problems in the first section, we will address the components of research hypotheses in the second section.

1. **Concept of Research Hypotheses:** A hypothesis is defined as an intelligent guess or inference reached by the researcher and held temporarily. It represents the researcher's initial opinion on solving and explaining the problem¹. Hypotheses are also considered temporary answers to the sub-questions posed, which may be correct or incorrect, and their validity is either confirmed or refuted at the end of the research².
2. **Importance of Research Hypotheses:** Scientific hypotheses are a key element in the structure of research, serving as extensions of the research problem. As long as a problem exists, it is necessary to seek hypotheses that can be used to solve it. Their importance lies in:

¹ Qandili, Amer, and Iman al-Samarra'i (2009). Quantitative and Qualitative Research. Amman, Jordan: Al-Yaziouri Scientific Publishing and Distribution House. p. 100.

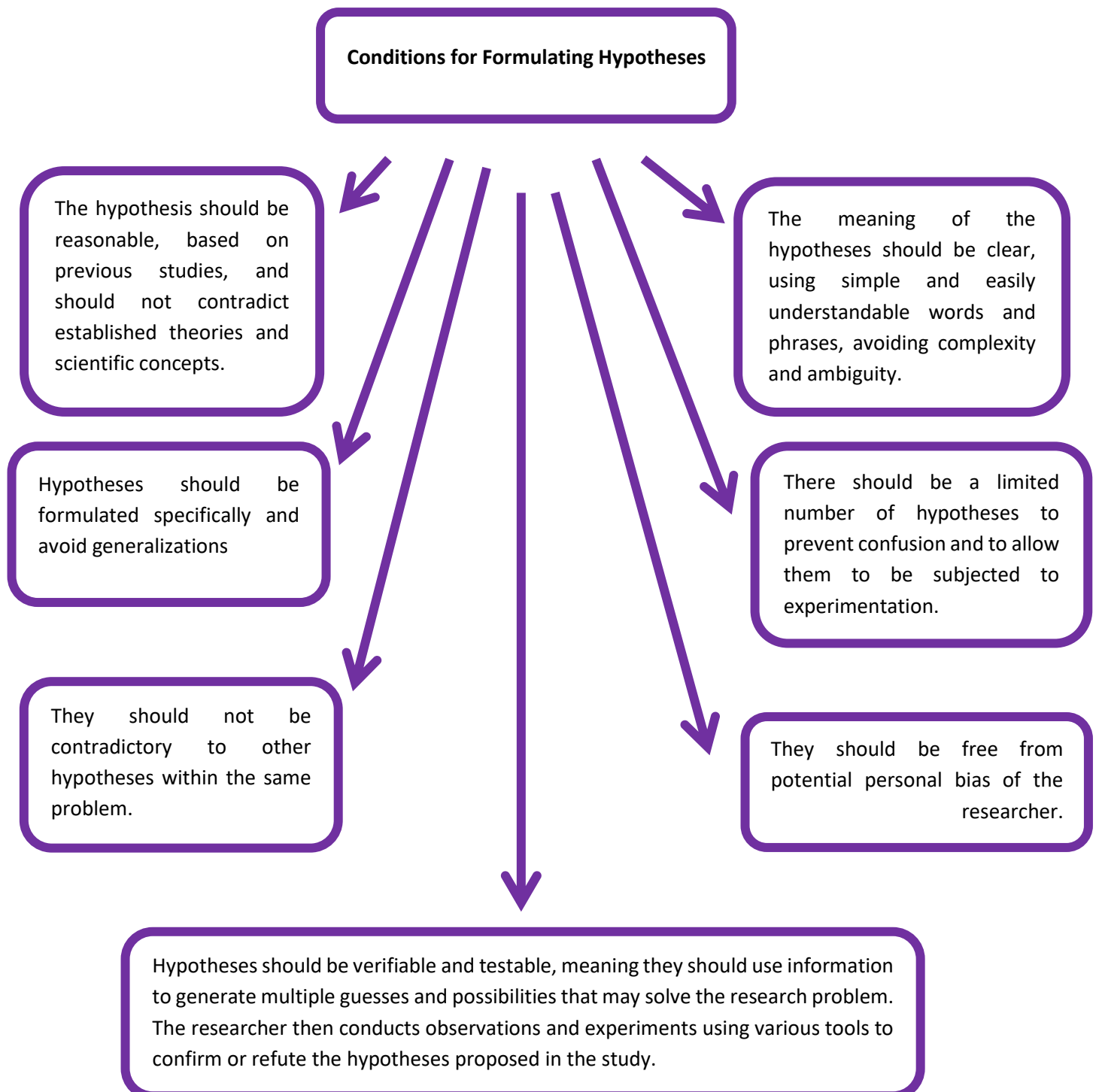
² Al-Samak, Muhammad Zahir Said (2011). Research Methods: Foundations and Applications. Amman, Jordan: Dar al-Yaziouri Scientific Publishing and Distribution House. p. 5.

- Precisely defining the dimensions of the problem and organizing the research, as hypotheses form the fundamental basis of the research topic.
- Guiding the researcher in outlining the research and identifying the necessary information to test the hypothesis.
- Determining the appropriate methods for data collection, acting as the primary guide for the researcher regarding methodology, tools, procedures, and survey questions or means to be used in the chosen field, helping to achieve the research objectives.
- Linking the research question to the proposed theories and transitioning from the abstract to the tangible, effectively translating ideas into reality¹.
- Selecting suitable statistical methods to test the relationships between the research variables.
- Guiding the researcher in analyzing results, interpreting collected data, and explaining phenomena in a scientific manner.

¹ Angers, Maurice. Research Methodology in the Human Sciences. Second edition. Dar al-Qasbah li-l-Nashr. pp. 155-156.

3. Conditions for Formulating Hypotheses.

Hypotheses are a sensitive and essential part of scientific research, requiring significant effort from the researcher and adherence to several conditions since it involves the birth of a new idea and guess in the field of research science.



4. Sources of Research Hypotheses.

Researchers draw their hypotheses from several sources, including:

- Personal experiences and observations of the researcher.
- Insights and derivations from previous studies.
- Scientifically confirmed theories and sound logic.

Conclusion:

The research problem is the backbone of any scientific study; it is fundamentally formulated to address a specific topic, and the impact of this addressing is clearly demonstrated through results that are interpreted and analyzed at the end of the research. For the research problem to be successful, the researcher must be able to formulate it accurately and precisely. Additionally, the research problem must prove its scientific significance to be worthy of study. Hypotheses are of utmost methodological importance in solving the research problem, as they represent "temporary guesses for solutions" that the researcher believes, and they provide a framework for addressing the research problem through experimentation and testing. Preliminary examination of data and some initial evidence that aids in studying the research topic is essential. Hypotheses help the researcher in selecting the scientific method appropriate for the nature of the research or scientific study. Therefore, a theory in its initial stages is called a hypothesis, and when this hypothesis is tested with more facts, it becomes a theory.

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