



TASK 3 – RESEARCH SKILLS 3

Requested methodological evaluation and formulation of a new research problem

Field:
Cybersecurity

Prepared by

ALI MMADI, PhD student-Midocean University





Research Skills (3)

Task 3

ALI MMADI

PhD student - Midocean University

www.midocean.ae

Today, I present to you my assignment concerning the formulation and evaluation of a research problem in the field of Information Technology, specializing in cybersecurity.

The objective of this presentation is threefold:

First, to present a research problem derived from a scientific study.

Second, to analyze how this problem was formulated and assess its compliance with methodological criteria.

Third, to propose a new research problem formulated according to the academic standards studied in the module.



Presentation of an existing research problem

The research problem analyzed is inspired by a study on the cybersecurity of smart power grids, with reference to the frameworks of the National Institute of Standards and Technology.

The main problem of this study is formulated as follows:

"To what extent do current protection mechanisms for smart power grids help reduce cyberattacks targeting critical energy infrastructures?"

This formulation takes an interrogative form, which aligns with the recommended method for expressing a scientific problem.

The variables are clearly identified:

- Independent variable: cybersecurity protection mechanisms
- Dependent variable: reduction of cyberattacks
- Context: critical energy infrastructures

Analysis of how the problem was formulated

By analyzing this issue according to the methodological criteria studied, we observe the following points:

✓ Positive points:

1. The problem is formulated as a clear question.
2. It establishes a relationship between two measurable variables.
3. It is placed in a specific context, that of critical infrastructures.
4. It has an obvious scientific and practical interest.

! Observed limitations:

1. The problem statement remains relatively general.
2. It does not specify the geographical context.
3. It does not specify the period of analysis.
4. It does not mention whether the study adopts a qualitative or quantitative approach.

According to the criteria of a good problem statement:

- ❖ It must be clear
- ❖ Realistic
- ❖ Delimitable
- ❖ Feasible
- ❖ Scientifically relevant

Overall, the researcher adhered to the essential criteria, but better delimitation would have strengthened scientific precision.

Formulation of a new research problem

Taking into account the following criteria:

- ☐ Clarity
- ☐ Relationship between variables
- ☐ Feasibility
- ☐ Social relevance
- ☐ Practical applicability
- ☐ Contextual specificity

I propose the following research problem:

"What is the impact of the maturity of cybersecurity incident management policies on the resilience of critical information systems in energy sector companies in the Comoros?"

Justification of the formulation:

1. The issue is formulated in the form of a question.
2. The variables are clearly defined:
3. Independent variable: maturity of incident management policies
4. Dependent variable: resilience of critical information systems
5. The context is clearly defined: companies in the energy sector in the Comoros.
6. The issue is realistic and applicable.

It addresses a real social need, as energy security is a strategic concern.

Evaluation according to the selection criteria of a research problem

This new problem meets the following criteria:

- ✓ It has scientific value
- ✓ It has practical usefulness
- ✓ It is specific and not vague
- ✓ It is applicable in the field
- ✓ It aligns with my skills in cybersecurity
- ✓ It can contribute to improving national security

Moreover, it is based on an identified gap: the lack of local assessment of the maturity of cybersecurity strategies in critical infrastructures.

CONCLUSION

In conclusion, formulating the research problem is a crucial step in the success of a scientific study.

A well-formulated problem guides the entire research work, facilitates the definition of hypotheses, and ensures methodological coherence.

In the strategic field of cybersecurity for critical infrastructures, precision and scientific rigor are essential to produce reliable and actionable results.

Thank you for your attention.

Documentation of the analyzed theses

Analyzed study:

Smith, J. (2021).
Cybersecurity Risk Mitigation in Smart Grid Infrastructure.
Doctoral Thesis, University of Texas at Austin, United States.

Methodological references:

Angers, M. (2000). Practical Introduction to Human Sciences Methodology.
NIST Cybersecurity Framework (2018), United States.



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Thank You

