Methodological Approaches in Military Science Research

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Abstract

Scientific research is a prerequisite for progress in all areas of society, and military science is no exception. However, its specificities require careful analysis in order to identify specific methodological approaches to ensure the added value of the results obtained. Moreover, the need for continuous transformation and adaptation of military structures to the operating environment and to the specific characteristics of contemporary armed conflicts leads to an increased interest in identifying innovative solutions in this field. Academic research is the approach to provide feasible and viable solutions to these challenges. However, there are relatively few works that address the methodological peculiarities specific to the field of military science. For this reason, the present article analyses how to organize and conduct scientific studies in the military field, proposing a structured framework of methodological approach in 14 steps to ensure the logical coherence of the approach, while highlighting the specificities of the field under analysis.

Keywords:

methodology; military sciences; research methods; research strategy; scientific research.

The adaptation of the armed forces to the challenges posed by the new security environment, as well as the typology and characteristics of military operations specific to today's conflicts, requires the identification of effective ways to conduct scientific research specific to the field of military science. This can ensure the technological and procedural progress so necessary for the armed forces to gain and maintain cognitive, informational, and decision superiority on the modern battlefield.

The methodology of scientific research provides an organized framework through which, starting from a research problem, solutions are identified, using scientifically proven tools and methods. Although the military field is part of the social sciences, it has certain specificities that have an inherent impact on the way in which specific research should be carried out.

However, although there have been scrappy attempts to develop a methodological framework specific to military science (Scipanov and Nistor 2020), the degree of methodological maturity for military-specific studies is relatively low. This is also **the main research problem** from which I started the scientific endeavor.

For this reason, I believe that finding a way to ensure the meticulousness of the methodological approach can guarantee valuable results, which in turn will lead to a viable process of adaptability of military forces and structures.

In this sense, **the main research objective** of this study was to develop a viable methodological research framework specific to military science research, which was **the main research question** that the current study sought to answer: *How should scientific research in military science be conducted?*

The paper is divided into three parts, following a logical progression. First, I have presented the specific characteristics of the military field as part of the social sciences. Then I have detailed the stages of the framework of scientific studies specific to this field. Finally, I have highlighted some methodological considerations that researchers should take into account in their studies.

In this sense, the approach was **empirical**, using **qualitative research**. Thus, I have tried to understand and present the nuances specific to the methodological approach to work in the field of military science. In order to **collect data**, I used the method of documentary analysis, selecting the most relevant works specific to the field analyzed. Also, the results are mainly based on secondary data, the role of the researcher being extremely important in their analysis and interpretation. For this reason, I was aware of the possible negative influence of my own biases on the results obtained, and constantly tried to apply reflexive measures to reduce them, but also to increase my own level of theoretical sensitivity.

1. Military science, part of social sciences

Military science is the systematized body of knowledge concerning the theory and practice of the use of military forces and capabilities in armed conflict. Kurt G. Piehler, in his book Encyclopedia of Military Science, emphasized that military

science is part of a more complex field of knowledge called military art, and identified the following areas as components of military science (Piehler 2013):
• military leadership;
• military organization;
• military education and training;
• military history;
• military ethics;
• military doctrine;
• military tactics, operations, and strategy;
• military geography;
• military technology and equipment.

The complexity and interdisciplinarity of the field of military sciences can therefore be noticed, with armed conflict being recognized as one of the most challenging, violent, and dynamic human actions (US Marine Corps 2020). Moreover, it is a constant of human nature, being an inseparable part of history since antiquity (Palazzo 2023).

Military science is considered to be part of the family of social sciences and is included at position 355 in the Dewey Decimal System (LibraryThing 2024). The analysis of human behavior in conflict, the human nature of the military operations process, the social impact and effects of war, and the cultural influences on the art of warfare are just some of the reasons for this inclusion.

The fact that it is considered a science implies a well-defined object of study, namely military action, as well as a rigorous methodology for conducting scientific research. I believe that the peculiarities of military science determine some distinctive elements in terms of research methodology specific to this branch of the social sciences.

The study of ongoing armed conflicts therefore imposes some limitations on research. It is recognized that the first casualty of any war is the truth. Perspectives on the same issue may vary considerably between belligerents. In addition, the information provided is biased towards the interests of the initiator in order to influence the target audience, be it the adversary, its own citizens, or the international community. In addition, perennial features specific to the nature of the conflict, such as uncertainty or friction, significantly affect the results of research on ongoing conflicts. All of this determines some of the peculiarities of military research.

Against this background, in the following sections of this article, I will offer a way of approaching scientific research in the field of "military sciences" in order to ensure methodological consistency and, consequently, the validity of the results obtained in the scientific endeavors undertaken.

2. Structural framework for scientific research

Scientific research is a process designed to increase the level of knowledge in a given field by providing answers to questions of interest both to the initiator of the

scientific endeavor and to a whole community of researchers who also wish to solve that problem. The constant changes in the nature of armed conflicts and the need to adapt military structures constantly give rise to research problems specific to the field of military science that need to be solved. However, as mentioned above, there are very few studies that deal with the methodological approach to specific issues in this field.

The process of developing scientific knowledge specific to any field presupposes the existence of a number of essential elements that must be reflected in the methodological approach adopted:

- the correct identification of a topic of interest through the formulation of research questions;

- the use of appropriate methods to the chosen field in order to generate truthful answers to the problem identified;

- appropriate reasoning and concrete evidence to support the proposed conclusions.

In this section, I will present an adapted version of a methodological approach specific to military science, incorporating elements from the work of scientific research specialists. It emphasizes "the research process that includes the steps from broad assumptions to detailed methods of data collection, analysis, and interpretation". (Creswell and Creswell 2023, 39)

The figure below illustrates the steps specific to this approach. It should be emphasized that this ensures methodological consistency in the study carried out, with the specific choices of each step in this framework influencing the choices of subsequent steps.

- 1. Defining the research topic
- 2. Literature review specific to the field(s) of study
- 3. Identifying and defining the research problem
- 4. Formulating research questions / research hypotheses
- 5. Setting research objectives
- 6. Establishing and defining the research philosophy (paradigm)
- 7. Establishing the type of reasoning
- 8. Setting the research approach
- 9. Setting the time horizon
- 10. Choosing the research strategy (research design)
- 11. Data sampling
- 12. Data collection
- 13. Analyzing and interpreting data
- 14. Presenting the results

Figure 1   Framework for a methodological approach to scientific research
Souce: The author's conception

2.1. Defining the research topic

Every scientific endeavor begins with the definition of a research topic. This is an extremely important step, as it focuses the analysis in the next stage on certain well-defined areas within the broad field of military science. At this stage, the exact title of the research may not have been determined, but a general idea of it should be in place.

2.2. Literature review specific to the field(s) of study

This section is extremely important to the overall scientific endeavor and should require considerable resources from the researcher. It aims to provide a critical review of the literature specific to the field of research. Theoretical underpinning of the research, identification of possible gaps in current knowledge on the topic under review and the reasons behind them, as well as highlighting the relevance of the scientific approach may be some of the objectives of this section. An equally important element of the literature review is the development of the researcher's theoretical sensibility. This represents "the ability to identify and extract from the data those elements that are relevant to the theory being formed" (Birks and Mills 2015), being crucial in developing valid and relevant findings. Figure 2 illustrates the key benefits of conducting a literature review.
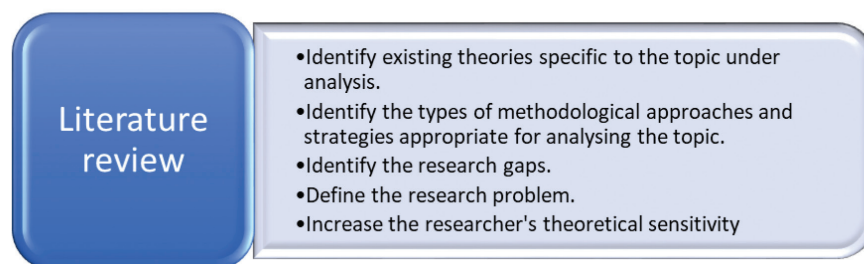

Literature review

- Identify existing theories specific to the topic under analysis.
- Identify the types of methodological approaches and strategies appropriate for analysing the topic.
- Identify the research gaps.
- Define the research problem.
- Increase the researcher's theoretical sensitivity

Figure 2   **Beneficiile analizei literaturii de specialitate**
Souce: The author's conception

2.3. Identifying and defining the research problem

"In everyday life, a problem is something we try to avoid. But in academic research, a problem is something we look for." (Turabian 2018, 40) The literature review provides the framework for identifying and defining the research problem. The latter is the foundation upon which all research is built. A problem that is relevant to the scientific community, well-defined, and grounded in the existing body of knowledge sets the stage for quality research.

Relevant military research problems may arise from the need to adapt military structures. Adaptability is an essential requirement during war (Barno and Bensahel 2020, 11); (Ryan 2022). Changes in the operating environment, the constant evolution of conflicts and their character may also generate research problems of interest to the military academic community.
The identification and clear definition of the problem to be researched provides the optimal framework for the coherent development of the specific research aim,

questions and objectives of the study to be conducted. This stage of the research may also determine the need to adjust the title of the thesis to better address the identified problem.

There are two types of research problems: practical and conceptual (Turabian 2018, 41). Both types of problems are amenable to military science, considering the three components of the combat power of any military structure: conceptual, physical, and moral (AJP-01 2022).

2.4. Formulating research questions/research hypotheses

The research is based on the research questions. They are the expression of the problem identified above. All the data collected in the scientific endeavor support the identification of answers to the research questions, test their validity, and together lead to the solution of the identified problem. The role of the research questions is to direct the scientific approach towards a specific goal. Without them, the risk of covering a wide range of topics related to the field under study is quite high. Therefore, research questions support the effort to select the relevant data to answer them, thus directing the whole scientific effort toward solving the problem.

In addition, in order to enhance the scientific value of the paper, it is mandatory that the research questions are relevant to the field of interest. Therefore, I consider that it is also important to make an argument on the need to investigate such questions. Thus, not all questions are of equal value. It is recognized that "the best questions are those whose answers raise many other questions." (Turabian 2018, 29)

The way in which questions are framed should also be considered. Thus, the types of questions will determine how the objectives are drafted, as well as the choice of research approach (qualitative, quantitative, or mixed). On the one hand, questions the answers to which are intended to explain certain phenomena, to understand their nature and their particularities, are suitable for qualitative research. In this case, questions such as *"How...?", "What are...?", "In what way...?", and "What impact...?"* are most appropriate. On the other hand, questions whose answers are intended to measure or quantify certain phenomena are suitable for quantitative research: *"What is ...?", "How much ...?", "How often ...?", "How long ...?", "What effect ...?", "To what extent ...?".*

Remember that quantitative research aims to test hypotheses. Now is the time to write them down. They are consistent with the research questions and follow a cause-effect format, as follows *"If ... (proposed change - action), then ... (increased combat effectiveness - effect)".*

Qualitative research, which aims to understand the nuances of particular phenomena, does not involve hypothesis testing, but the research questions guide the scientific approach. Actually, the qualitative approach aims to build theories on the basis of the data collected, which can then be tested through quantitative research.

2.5. Setting research objectives

The research questions determine how the objectives are written. There must be coherence between these two specific elements of scientific research.

Thus, qualitative research questions will lead to objectives that include verbs such as: explore, investigate, understand, comprehend, examine, describe, interpret, evaluate, assess, develop, etc. Quantitative research questions may include verbs such as: determine, measure, compare, identify, analyze, test, calculate, etc.

To formulate research objectives correctly, it is important to follow the SMART acronym (**Specific, Measurable, Achievable, Relevant, and Time-bound**).

2.6. Establishing and defining the research philosophy (paradigm)

Establishing a philosophical framework is the basis for the design of all research at all stages (Žukauskas, Vveinhardt and Andriukaitienė 2018, 506), and ensures methodological consistency throughout the scientific study. Research philosophy includes the system of beliefs, assumptions, and principles that underpin how one approaches the study (Saunders, Lewis and Thornhill 2019, 130).

Although there are differences in approach, the literature identifies three common research philosophies: positivism, constructivism/interpretivism, and pragmatism (Creswell and Creswell 2023; Saunders, Lewis and Thornhill 2019; Žukauskas, Vveinhardt and Andriukaitienė 2018).The delineation of these is in relation to three categories of research assumptions: ontological, epistemological, and axiological (Saunders, Lewis and Thornhill 2019, 133-134). Ontological assumptions refer to the nature of social reality, epistemological assumptions refer to the nature of human knowledge, and axiological assumptions identify the role of researchers' values, beliefs, and ethics in the scientific processes undertaken. The table below provides a primary framework for distinguishing between philosophies in relation to the three research assumptions.

TABLE NO. 1

Research philosophies

Philosophy	Ontological assumptions	Epistemological assumptions	Axiological assumptions
Positivism	- Reality is objective. - There is only one reality that can be studied.	- Knowledge is obtained through observation and empirical measurement. - Truth is discovered through rigorous scientific methods.	- The researcher's values do not influence the research results, which are objective and reproducible.
Constructivism / Interpretivism	- Reality is socially constructed and subjective. - There are multiple realities, dependent on the perceptions of individuals.	- Knowledge is obtained by interpreting the subjective experiences and perspectives of individuals. - Truth is relative and depends on the context and perspective of the researcher and the subjects studied.	- Research is influenced by the values and experiences of the researcher. - Value neutrality is recognized as impossible.
Pragmatism	- Reality is both objective and subjective and can be studied from multiple perspectives. - Pragmatism focuses on practical problems and useful solutions.	- Knowledge is obtained through a combination of methods, including empirical and interpretive. - Truth is determined by the usefulness and practical applicability of the results.	- Research is influenced by values, but these are integrated into the research process to achieve practical ends.

Thus, "while positivism privileges the measurement of social phenomena, interpretivism focuses on exploring the complexity of these phenomena in order to develop an interpretive understanding" (Collis and Hussey 2021, 41), and pragmatism acknowledges influences from the other two philosophies, focusing on the practical applicability of knowledge.

However, in order to ensure that the researcher and the approach of the study are correctly aligned with one or the other of these philosophies, it is necessary to reflect on the previously established research objectives. This will be done in relation to the three research assumptions outlined above.

2.7. Establishing the type of reasoning

Identifying the type of reasoning that will be used provides methodological clarity to the approach that will be taken and expresses the way of thinking that the researcher will use during the scientific research. There are two types of reasoning: inductive and deductive. These need to be related to the chosen philosophy and determine the type of research approach and, consequently, the way in which sampling, data collection, and analysis will be undertaken.

Inductive reasoning can be useful in exploring new phenomena specific to military science and in developing innovative solutions to complex problems specific to the current environment in which the armed forces operate. *"Research approaches that generalize from a particularity (usually a set of observations of one kind) to a broad statement, such as a general theory or proposition about a topic, use inductive reasoning."* (Given 2008, 429) It is therefore a logical process by which a general conclusion is drawn from particular observations. In other words, inductive reasoning is research that starts with data and moves towards a general conclusion. It is more suited to qualitative research, which involves understanding the different nuances of a particular phenomenon.

Deduction, on the other hand, is the oldest form of reasoning (Given 2008, 207) and ensures the testing of existing hypotheses and theories by applying them to specific situations and assessing their validity. It involves a journey from the general to the particular, to specific conclusions, and is therefore suitable for quantitative research.

2.8. Setting the research approach

The choice of research approach is made in relation to all the methodological options that have been explored up to that point in the research. However, it is the nature of the research objectives and questions that determine the type of research chosen (Leavy 2023, 9). The proposed objectives, which aim to explore in depth certain phenomena specific to the military domain, to identify the essential factors and perceptions of the subjects involved in it, require qualitative research to be carried out (Hennink, Hutter and Bailey 2020, 41). Understanding the experiences of the military in certain combat or training situations may constitute specific topics for qualitative research within the domain of military sciences.

On the other hand, studies that aim, for example, to measure target effects or to test certain technologies will require the use of quantitative research. This type of research can support the assessment of the performance of combat technology, the effectiveness of military operations, the efficient allocation of resources, or the development of advanced technologies, all of which are extremely important elements of military science.

There is also the possibility of using a mixed methods approach, including both qualitative and quantitative methods, but this is far too complicated and is not recommended for young researchers because of the risk of not being able to maintain methodological consistency, thus affecting the quality of the results obtained.

It is of the utmost importance to maintain a logical coherence of the methodological choices made so far in the research. Figure 3 illustrates such potentially viable options in relation to qualitative and quantitative approaches.
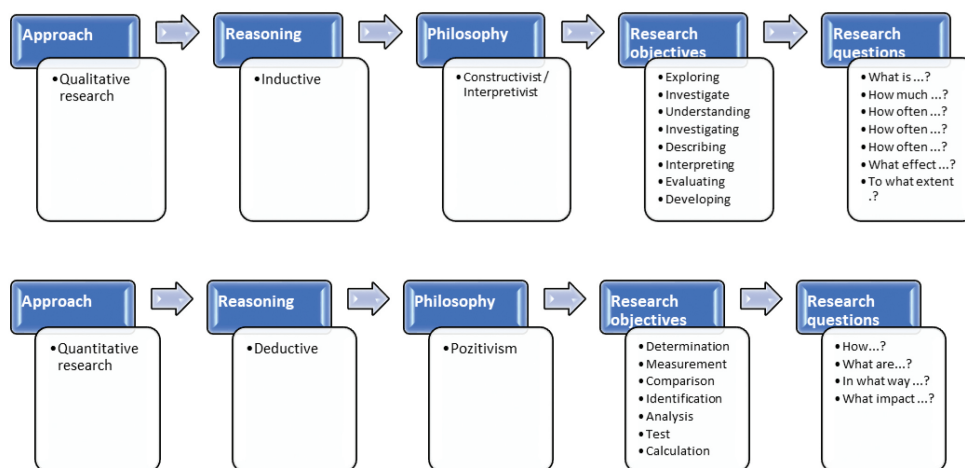

Figure 3 **Methodological options specific to quantitative and qualitative research**
Souce: The author's conception

2.9. Setting the time horizon

Defining the time horizon on which the research is focused is an important element of the scientific approach. It provides a clear direction for the type of data to be collected later in the study. There are two-time horizons, both of which are relevant to military science. Cross-sectional studies, for example, focus data collection and analysis efforts on a particular timeframe (Wang and Zhenshun 2020, S65). The analysis of specific features of contemporary military operations can be an example of cross-sectional military research.

Longitudinal studies, on the other hand, focus on analyzing certain phenomena over time to identify their perennial features as well as variations, while understanding potential patterns of change to provide foresight on the phenomenon.

The simplest example of military research concerns armed conflicts. A longitudinal analysis performed on them can thus ensure, on the one hand, the identification of features specific to their nature and, on the other, those specific to their character.

2.10. Choosing the research strategy (research design)

The research strategy is the plan for how the study will be carried out in concrete terms (Johannesson and Perjons 2014). The value of this decision comes from its impact on how the data will be collected, analyzed, and interpreted. Of course, the chosen strategy must be guided by the research questions and objectives, as well as the resources at hand, and must be consistent with previous methodological choices. I need to mention that the terms research design and research strategy are often used interchangeably in the academic literature, although they have similar meanings.

The chosen research approach limits the options for selecting the research strategy. In Table 2 I have highlighted which strategies are most appropriate in relation to the two main research approaches.

TABLE NO. 2

Research Strategies

Specific qualitative research strategies	
Phenomenological design	Purpose: To explore and understand individuals' lived experiences of a particular phenomenon. Example: Analyzing the lived experiences of veterans of operations in conflict zones.
Grounded theory	Aim: To generate a theory that explains a particular process based on data collected from participants. Example: Developing a theory of how military leaders make decisions under pressure.
Ethnographic study	Aim: To study the social interactions of a group in their natural environment. Example: To study the daily life of a particular elite military unit in order to identify specific elements of its high performance.
Case study	Aim: To carry out an in-depth analysis of one or more cases in a real or simulated context. Example: Analysis of the decision-making process during a specific military operation or training exercise.
Specific quantitative research strategies	
Descriptive study	Purpose: To describe the characteristics of a phenomenon based on measurements. Example: To study the prevalence of certain conditions in military personnel.
Correlational study	Purpose: To investigate the relationship between two or more variables without manipulation. Example: Investigating the relationship between physical fitness and the decision-making performance of commanders.
Experiment	Aim: To determine cause and effect relationships by manipulating one or more variables. Example: To test the effectiveness of a new training program on the performance of military units.

Once the strategy has been chosen, there are three very important steps in the scientific approach: sampling, data collection, and data analysis. Although each strategy has its own particularities in terms of methods and implementation, these three steps are a constant in all research.

2.11. Data sampling

Data sampling is a crucial process in research, including qualitative and quantitative studies, as it ensures the representativeness and validity of the results. In the context of research, sampling is the process of selecting a part of the study population in order to make inferences about the whole population. Most qualitative research uses non-probability sampling, while quantitative research uses probability sampling (Hennink, Hutter and Bailey 2020, 164).

Probability sampling is also known as 'convenience sampling' because it uses statistical methods to select participants at random. In other words, the procedure for selecting each participant is predetermined and does not depend on the

judgment of the researcher. The result is a random sample. In contrast, probability sampling requires a representative sample to allow the researcher to generalize his or her findings.

Non-probability sampling, on the other hand, does not involve the use of a random statistical selection of participants. In other words, instead of following a set procedure, the researcher uses judgment and discretion to select each subject individually. This involves a deliberate rather than random selection of the sample (Moser and Korstjens 2018, 11). It is also worth noting that the sample size in qualitative approaches is much smaller than in quantitative studies (Braun and Clarke 2013, 55; Howitt 2019, 179).

In the table below, I have highlighted the main types of sampling specific to the two broad categories outlined above.

TABLE NO. 3

Sampling strategies

Non-probability sampling	
Purposive Sampling	Description: Selection of subjects with knowledge and experience relevant to the phenomenon under study.
Snowball Sampling	Description: Using initial participants to recruit other participants, who in turn recruit other participants.
Theoretical Sampling	Description: Selecting participants according to the development of the theory to explore and refine emerging categories.
Convenience Sampling	Description: Selecting participants who are most accessible.
Probability sampling	
Simple Random Sampling	Description: Each member of the population has an equal chance of being selected.
Systematic Sampling	Description: Selection of every nth member of the population after a fixed interval.
Cluster Sampling	Description: Dividing the population into groups (clusters) and randomly selecting entire clusters.
Stratified Sampling	Description: Division of the population into strata (clusters) and random selection within each stratum.

2.12. Data collection

Once the sample has been defined, data collection is carried out. Depending on the chosen research strategy and approach, the optimal collection methods will be chosen. This will depend on the research objectives, the type of data required, and the resources available. The data collected may be primary or secondary, both equally valuable in the scientific endeavor if they support the research objectives. Thus, primary data are those collected directly by the researcher through interviews, surveys, or observation, while secondary data are those collected by other researchers for other purposes, but whose analysis from the perspective of the subject of the study can provide relevant answers to the research questions. Unit daily orders, mission reports, and document archives within classified document compartments can be considered as valuable sources of secondary data in the military field.

An important element to be considered is the specific framework for the use of data collection methods. For example, in the military system, exercises or various training games such as wargaming or CDAG (Concept Development Assessment Game) can provide a good context for collecting the data needed for research.

In Table 4 I have highlighted the main data collection methods specific to qualitative and quantitative research. It should be noted that different collection tools (instruments) such as specialized software, observation sheets, questionnaires, or audio and video recordings can be used to support them.

TABLE NO. 4

Data collection methods

Qualitative data collection methods	
Interview	Description: Structured, semi-structured, or unstructured conversations with participants to obtain in-depth information. Advantages: Allows for in-depth exploration of participants' experiences and tailoring of questions based on responses to meet objectives.
Focus group	Description: Facilitated group discussions, led by a facilitator, focusing on a specific topic. Advantages: Generates ideas and information through group interaction and dynamic discussion.
Participatory observation	Description: The researcher is embedded in the participants' environment to observe their behavior and interactions. Advantages: Provides an insider's perspective and valuable contextual details about the phenomenon under study.
Questionnaire	Description: Uses open-ended questions to understand the nuances of specific phenomena as interpreted by the participants. Advantages: Provides the opportunity to engage a larger number of respondents in a shorter period of time.
Documentary analysis	Description: Selection and analysis of existing documents such as post-mission reports, diaries, field notes, and other written materials. Advantages: Provides access to information that has already been collected and documented.
Quantitative data collection methods	
Survey and questionnaire	Description: Use of structured forms to collect data from large numbers of respondents. Advantages: Allows data collection from a large sample and rigorous statistical analysis.
Experiment / Measurements	Description: Manipulation of independent variables to observe effects on dependent variables in a controlled environment. Advantages: Ability to establish clear causal relationships.
Existing databases	Description: Use of quantitative data previously collected in other studies. Advantages: Saves time and resources by using existing data.
Systematic Observation	Description: Observe and record behaviors in a structured and standardized way. Advantages: Provides measurable data on specific behaviors.

2.13. Analyzing and interpreting data

Analyzing and interpreting data in relation to the research objectives provides answers to the problem that prompted the scientific approach. Data analysis methods vary according to the type of data (qualitative or quantitative) and the research objectives. Qualitative methods are more appropriate for narrative and contextual data, while quantitative methods are appropriate for numerical and measurable data, as can be seen in Table 5.

The use of software, such as NVivo or MAXQDA for qualitative analysis, or SPSS (Statistical Package for the Social Sciences), Google Analytics, and SAS (Statistical Analysis System) for quantitative analysis, can facilitate the analysis process by providing an easy tool for importing and visualizing data, as well as arranging, coding and organizing data statistically.

2.14. Presenting the results

Finally, once the data have been analyzed and interpreted, it is essential to present the results. The following aspects should be considered:

TABLE NO. 5

Data analysis methods

Qualitative data analysis methods	
Thematic analysis	<u>Description</u>: Identifying, analyzing, and reporting themes (patterns) in qualitative data. <u>Process</u>: Read data, code relevant segments, identify themes, review and define themes, and report findings.
Content analysis	<u>Description</u>: Systematic analysis of textual content to determine the frequency of occurrence of particular words, themes, or concepts. <u>Process</u>: Coding data into categories, quantifying categories, and interpreting results.
Grounded Theory	<u>Description</u>: Developing a theory based on the data collected from the source. <u>Process</u>: Iterative data collection and analysis, coding of data, constant comparison of data, development of major categories, categories and subcategories and relationships between them, development of emergent theory.
Interpretative Phenomenological Analysis (IPA)	<u>Description</u>: In-depth study of personal experiences and how individuals make sense of these experiences. <u>Process</u>: Transcribing and reading data, identifying and coding themes, and developing an understanding of experiences.
Methods for analyzing quantitative data	
Descriptive statistics	<u>Description</u>: Summary and description of the main characteristics of a data set. <u>Examples</u>: mean, median, mode, dispersion, frequencies.
Inferential statistics	<u>Description</u>: The generalization of results from a sample to the general population. Helps to identify differences between groups or relationships between variables. <u>Examples</u>: T-tests, ANOVA (analysis of variance), correlation analysis, regression analysis.

- explanation of the results obtained;

- placing them within the existing literature and highlighting the novelties and possible future research directions;

- organizing the results obtained in relation to the research questions posed;

- highlighting whether or not the hypotheses established in the quantitative research are validated.

3. Additional methodological reflections

Throughout the research, it is imperative to address several elements that will increase the accuracy of the results obtained. For example, especially in qualitative research, where the role of the researcher is much greater than in quantitative research (Creswell and Creswell 2023, 278), it is absolutely necessary to explain the reflexive measures taken during the study in order to reduce the influence of one's own biases on the results obtained. In addition, the protection of study participants' data should be an ethical priority in research, thus emphasizing issues of research ethics.

Furthermore, no scientific endeavor is perfect, all have certain limitations. It is the responsibility of every researcher to disclose what these are (Ross and Zaidi 2018, 261), where they come from and, perhaps most importantly, what steps they have taken to reduce their influence. In the case of research specific to the field of military science, these limitations can arise mainly from the following:

- the framework for collecting results, such as training activities or games specific to the military system, cannot replicate certain considerations specific to armed conflict, such as fatigue, stress, fear, and anxiety levels;

- also, as the military system is hierarchical, some data collected from respondents may not honestly reflect their position due to fear of possible

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future coercive measures;

- given the nature of the information conveyed in the military system, the level of categorization of this information may also pose significant limitations to public studies in the field of military science;

- as with all research, there may also be methodological limitations, mainly due to the way in which data collection methods are used.

All these methodological considerations must be taken into account in the scientific endeavor, which requires the constant application of measures to reduce their influence on the quality of the results obtained.

Conclusions

Methodology is the backbone of all scientific work. All methodological choices made by researchers must ensure the logical coherence of the research process in order to obtain valuable results, thus contributing to the development of innovative solutions and, implicitly, to the advancement of knowledge in various fields. However, military science, as a component of the social sciences, has not received much attention in terms of the types of methodological approaches specific to this field. This was also the research problem that initiated my scientific endeavor. Coupled with the constant need for military systems to adapt to the challenges of the operational environment, I am aware that the situation presented may represent a significant vulnerability for the armed forces. The result obtained and proposed in this article is a coherent structural framework for approaching military science research in 14 steps, following a logical progression:

• **Defining the research topic**. Choosing a relevant topic ensures that research efforts are directed toward the real needs of the military domain.

• **Literature review specific to the field(s) of study**. A careful review of the literature ensures sound theoretical grounding, identifies knowledge gaps in military research, and increases the researcher's level of theoretical awareness.

• **Identifying and defining the research problem**. The clarification of the research problem determines the focus of the study on essential aspects of the field, ensuring the potential to fill the identified knowledge gap.

• **Formulating research questions/research hypotheses**. Well-defined hypotheses enable the exploration of potential solutions to military challenges, while research questions guide the research effort in qualitative approaches.

• **Setting research objectives**. Clearly stated objectives direct the research towards clear outcomes, which need to be in line with the type of research question formulated and the qualitative, quantitative, or mixed approach chosen.

• **Establishing and defining the research philosophy (paradigm).** Adopting an appropriate paradigm ensures that the theoretical approach is aligned with the practical realities of the military environment, this being done in relation to the researcher's ontological, epistemological, and axiological research assumptions.

• **Establishing the type of reasoning**. The choice of appropriate reasoning allows the development of logical and coherent conclusions, essential in the military context.

• **Setting the research approach**. A well-chosen methodological approach, whether qualitative, quantitative or mixed, optimizes the process of collecting and analyzing relevant data.

• **Setting the time horizon**. Clearly defining the time horizon ensures the relevance of the results obtained to the defined context.

• **Choosing the research strategy (research design)**. An effective research design allows the establishment of a coherent and logical framework for sampling, data collection, and analysis.

• **Data sampling**. Selecting a representative sample contributes to the generalizability of results and the validity of the research.

• **Data collection**. Rigorous data collection provides a sound basis for further analysis and interpretation, with different methods suitable for each of the qualitative, quantitative, or mixed approaches adopted.

• **Analyzing and interpreting data**. Detailed analysis allows, on the basis of well-defined scientific methods, the derivation of relevant conclusions on the application of the results obtained to the military field, thus answering the research questions and ensuring that the objectives set are met.

• **Presenting the results**. The clear and structured communication of the results facilitates their correct understanding, but also their integration within the existing military-specific knowledge.

In addition, for each of these steps, I have highlighted the peculiarities specific to the military domain, as well as potential examples to ensure a high level of understanding of how to implement the proposed product. Also, throughout the article, I have constantly emphasized the need to maintain a methodological consistency of the choices made in order to ensure the validity of the results obtained, providing potential solutions to support researchers in the choices made.

In conclusion, I appreciate that the result obtained, namely the structural framework for military science research, provides a comprehensive approach for rigorous and impactful studies, providing a viable orientation for young researchers.

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