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SCIENTIFIC RESEARCH AS A KEY ELEMENT OF INSTITUTIONAL TRANSFORMATION IN THE PERUVIAN ARMY: A SYSTEMATIC REVIEW

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ABSTRACT

The objective of this study was to determine the contribution of scientific research to institutional transformation in the Peruvian Army. The eligibility criteria applied were topic, sources, methodological design, related topics, language, and publication date, which allowed for the analysis of 212 studies from different academic databases. Exclusion criteria, in a first phase, excluded duplicate studies; in a second phase, those that covered study topics and variables unrelated to the research; and in a third phase, those that did not provide the required information, after analyzing the title, abstract, and full text. The databases reviewed were Scopus, ScienceDirect, Scielo, Redalyc, ERIC, and Dialnet, during the first days of June 2025. Fourteen studies were included, whose main characteristic is their focus on strengthening education, research, and innovation in military and academic contexts. The main results show that scientific research constitutes a fundamental activity for the transformation of an institution, by strengthening ethical and professional training, promoting critical thinking, and optimizing evidence-based decision-making, fostering a culture of continuous improvement through the use of innovative methods and the inclusive participation of diverse stakeholders. Furthermore, this analysis revealed a limited research culture, which restricts the assessment, development, and effective application of scientific research in the process of institutional transformation. It is concluded that, although scientific research plays a crucial role in the institutional transformation of the Peruvian Army, its impact is conditioned by a still nascent research culture, which limits its full appreciation and application.

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I. INTRODUCTION

As [1] assert, "technology and innovation in the defence and armed forces sector are critical components for guaranteeing a country's security and functioning." In essence, contemporary defence systems must transcend a reliance on operational force and instead integrate scientific knowledge and innovation capacity as foundational elements. This integration is imperative for the effective anticipation of threats, the adaptation to novel scenarios, and the maintenance of a credible deterrent posture. [2] asserts that the Peruvian Army is facing a number of challenges, as outlined in the Institutional Transformation Plan (PTI), including a lack of equipment, infrastructure, and other logistical capabilities.

These deficiencies have a detrimental effect on the Army's operational capacity. It is evident that the issue at hand cannot be resolved solely through investments in infrastructure or imported equipment. Instead, there is a necessity to fortify internal capabilities for diagnosis, solution design, and continuous improvement. These processes are contingent on knowledge generation and management. [3] asserts that "scientific research is a prerequisite for progress in all areas of society, and military science is no exception." Consequently, research stemming from military experience and context addresses real-world problems and offers applicable solutions that can directly contribute to institutional modernisation, doctrinal innovation, and improved performance in complex scenarios.

Furthermore, [4] state that "military organisations have a structure and a leading role in strategic areas focused on science, technology, and open innovation, conducting strategic programs and projects of economic and social interest," which allows for the integration of scientific research with decision-making at all levels of command. The present research seeks to transform scientific research into an active instrument for continuous improvement, innovation, and institutional transformation, thus closing the gap between the knowledge generated and its effective use in military operations. A particularly illustrative case is the diagnosis carried out in the Colombian Air Force (FAC), where the operational leaders themselves recognise that many of their needs can be addressed internally through scientific research processes. According to [5], "The mission area agrees that a significant proportion of the personnel requirements can be met through in-house research, but the ST process must be updated to achieve this."

This statement reveals an institutional disposition towards applied research. As [6] asserts, it is imperative to analyse institutions from the standpoint of organisational culture, as it is widely acknowledged to be a pivotal element in the realisation of an organisation's objectives. In the absence of an institutional environment that acknowledges the significance of generating and applying scientific knowledge, even the most meticulously designed reforms risk being rendered ineffective. In the Peruvian Army's current educational system, there is a hierarchical structure that begins with the Ministry of Defence, passes through the General Directorate of Education and Doctrine, and continues on to the Army's Directorate of Education and Doctrine (DIEDOCE), the Army's Education and Doctrine Command (COEDE), and finally, the Army's educational institutions, which are subordinate to this command. The Army is responsible for the provision of undergraduate and postgraduate educational programmes.

The former encompasses university professional training and technical/technological professional training, while the latter comprises doctorates, master's degrees, diplomas, second professional specialisations and continuing education. The promotion and development of military research is facilitated through the academic programmes conducted by these institutions [7]. The significance of this research lies in the educational responsibility incumbent upon the Army with regard to the challenges involved in implementing an effective and structured system that fosters scientific research. These challenges encompass the inadequate management of scientific research, the necessity to increase the impact and significance of published research, and the improvement and augmentation of resources necessary for the sustainability of scientific research processes. The rationale underpinning this research is the pursuit of enhancing scientific output within the Army, a pursuit that will yield dual benefits for its members.

On the one hand, it will enable them to cultivate critical and strategic skills, and on the other, it will have a positive societal impact in Peru by generating knowledge applicable to national defence, security, and social development. Conversely, this research is pertinent to the management of scientific research in the Peruvian Army, with a particular focus on the undergraduate and graduate schools that fall under the jurisdiction of the Army Doctrine Directorate (JDOCE), within the Army Education and Doctrine Command (COEDE), as these entities are responsible for scientific production within the institution. In this sense, the general research question guiding this study is as follows: How does scientific research contribute to institutional transformation in the Peruvian Army? The specific research questions to be addressed are as follows:

This study sets out to investigate the influence of scientific research results on modernisation processes, doctrine and decision-making in the Peruvian Army. Furthermore, it seeks to ascertain the perception of members of the Peruvian Army with regard to the impact of scientific research on organisational change. The aforementioned limitations have a restrictive effect on the institutional capacity to contribute innovative knowledge that would otherwise strengthen the functions of the Peruvian Army. The objective of this study is to determine the contribution of scientific research to institutional transformation in the Peruvian Army. The objective of this research is to establish an optimal scientific research management system that allows the research carried out by the members of the institution to be used, providing tools for the improvement of the processes and development of these.

I.1 BACKGROUND

In [8] posit in their research, titled "Security and Defense, Technological Development, Innovation, and Transformation," that contemporary threats are inducing a transformation of military forces to operate in new, complex scenarios. According to [9] conducted a study with the title "Changing Mindsets: The Transformation Process of the Colombian National Army (2011–2018)," it is stated that "education, both domestically and internationally, has facilitated the conceptualisation and implementation of an institutional cognitive transformation from the top-down, with the endorsement of the Army itself for its design and execution."In the present study, [10] explore the intricacies of "Technology and Innovation Management in the Defense Sector: Results from a Bibliometric Analysis," states that "there is a necessity for structured and systematic processes for managing technology and innovation, which allow for supporting decision-making regarding R&D&I processes.

"In his research entitled "Some Ideas on Scientific Research" [11], the author asserts that the purpose of scientific research is to verify, refute, expand upon, or propose new experimental or theoretical contributions to the body of science being addressed. In his research paper, entitled "Educational Management as a Driver of Scientific and Technological Research:", By [12] explores the potential impact of educational management on the promotion of scientific and technological research. New horizons for innovation" [Educational management as a driver of scientific and technological research: New horizons for innovation] mentions, "Education and research have a reciprocal relationship. It is evident that research produces education, while education, in turn, enhances research. Both of these factors enable individuals to engage in recreational activities, enhance their abilities, develop new skills, and achieve personal growth within the designated space-time continuum.

II. METHOD

In order to ensure the rigour, transparency, and reproducibility of this study, the PRISMA methodology was employed. This methodology facilitates the systematic structuring of the identification, selection, and analysis of relevant scientific literature. The PRISMA statement, published in 2009, is a reporting guideline designed to address the problems in the publication of systematic reviews [13].

II.1 ELIGIBILITY CRITERIA.

The following eligibility criteria were established for this research:

- Topic: Research that links scientific research as a driver of institutional transformation in the Army or armed forces of Peru or other countries.
- -Literature sources: Peer-reviewed scientific articles published in indexed academic journals.
- -Methodological design: Studies may employ a quantitative, qualitative, or mixed-methods design.
- -Related topics: Research addressing concepts related to scientific research, scientific study, and academic research, along with terms associated with the military sphere, such as army and armed forces, is considered.
- -Language: Studies must be written in English, Portuguese, and Spanish to facilitate analysis and understanding, and to maintain a Latin American context throughout the research.
- -Publication date: Research must have been published between January 1, 2021, and May 30, 2025.

II.2 SOURCES OF INFORMATION

The following platforms were consulted in order to conduct the research: Scopus and ScienceDirect, which offer high-impact, multidisciplinary academic literature; SciELO and Redalyc, which focus on research in Spanish from Latin America and the Caribbean; ERIC, which specialises in educational studies; and Dialnet, which provides access to scientific output in Spanish, especially in the social sciences and humanities. The preceding five-year period was the subject of the study. The databases were consulted on 6 June 2025.

II.3 SEARCH STRATEGIES

For the search strategy, the keywords “scientific research” and “Army” were identified, along with their corresponding synonyms. Using the Boolean operators AND, OR, NOT, (…) and “…”, the following search equation was applied:

((“scientific research”) OR (“scientific study”) OR (“academic research”)) AND ((army) OR (“armed forces”)).

The filters applied to all databases were:
- Subject areas: Social Sciences
- Access type: Open Access
- Publication dates: January 1, 2021 to May 30, 2025

II.4 SELECTION PROCESS

The selection process will be carried out in accordance with the guidelines established by the PRISMA methodology. A systematic search strategy will be conducted in six recognised academic databases, with the objective of compiling all potentially relevant research. Subsequent to the compilation of the records, the implementation of automated tools and manual review will be employed for the purpose of the elimination of potential duplicates. Subsequent to this, the studies will be evaluated through a progressive analysis. Initially, the titles will be examined, followed by the abstracts, and finally, the full texts of the studies that have passed the previous stages. The present review will be based on a set of predefined criteria, with a focus on thematic relevance, specific variables, and methodological quality. The data cleaning process will be executed in two successive phases to ensure that the studies included in the final analysis rigorously address the study's objectives.

III. RESULTS

A total of 212 studies were identified through searches in six academic databases: Scopus (n=29), ScienceDirect (n=46), SciELO (n=12), Redalyc (n=80), ERIC (n=13), and Dialnet (n=32). Following the compilation of the results, two duplicate studies were eliminated through the utilisation of automated tools and manual review, resulting in a total of unique studies that advanced to the subsequent stage. During the selection process, 183 studies were excluded. Of these, 159 were discarded for not directly addressing the study's central theme, which was the role of scientific research in institutional transformation processes within military or similar contexts. Furthermore, 24 studies were excluded on the grounds that they failed to consider the specific variables defined in this review. These included the link between academic research, organisational change, and the armed forces environment. This filtration process was implemented to ensure that the analysis remained exclusively focused on literature that was deemed relevant to the research objectives.During a subsequent review phase, 13 further studies were excluded.

Following a thorough review of the titles, five of these were discarded as they were deemed to be unrelated to the research topic. Following a thorough review of the abstracts, a further five were disqualified on the grounds that they failed to adequately address the correlation between scientific research and institutional transformation. Following a thorough examination of the full texts of three studies, they were ultimately excluded from the review due to their failure to meet the established criteria for analytical depth and methodological relevance. The process of identifying, selecting, and excluding studies was carried out with methodological rigor. This ensured that the works ultimately included in the systematic review met the criteria for relevance, scientific quality, and thematic pertinence, thus guaranteeing a solid foundation. In order to facilitate a more comprehensive understanding of the methodology, the flowchart (Figure 1) is presented, illustrating the application of the PRISMA approach.

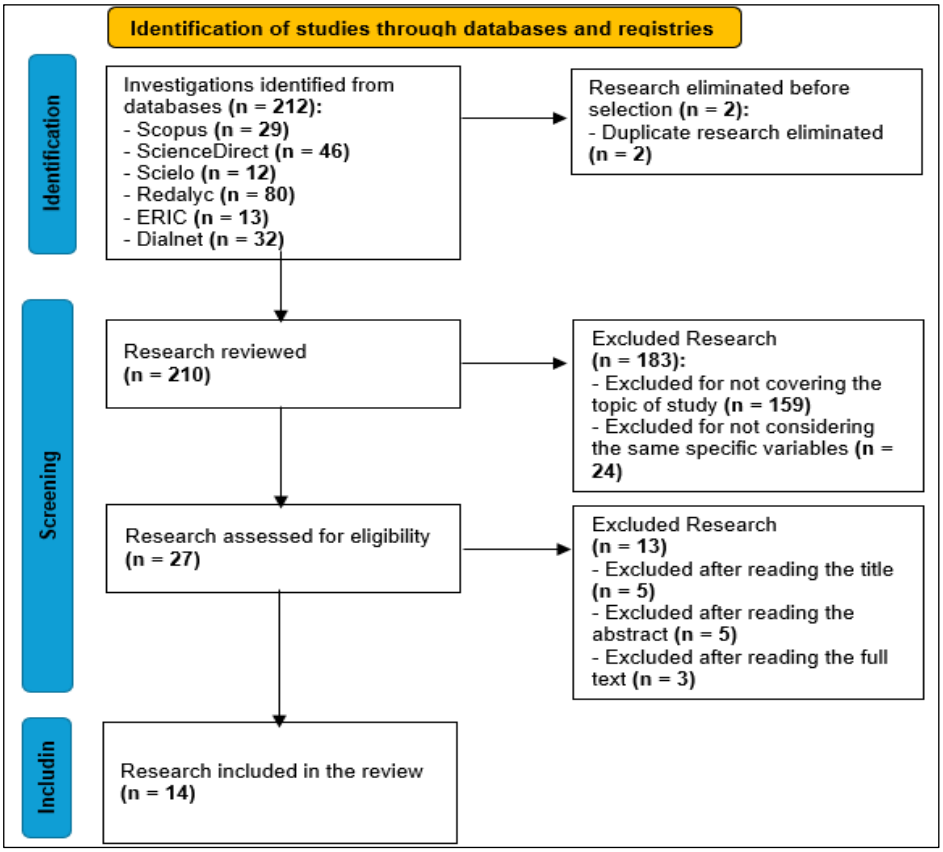

Figure 1: PRISMA flowchart for item selection.
Source: Authors, (2026).

The exclusion process was fundamental to ensuring that the final analysis was based solely on scientific literature aligned with the research objectives. The stages at which various studies were discarded, as well as the specific reasons justifying their exclusion, are detailed below. Following a thorough examination of the titles, it became apparent that the subsequent studies were to be excluded on account of the fact that they did not directly address the relationship between scientific research and institutional transformation in military contexts. Furthermore, they did not take into consideration the specific variables that had been defined for the present systematic review. In [14] published an article entitled "Improving Language Learning with Virtual Reality: A Quasi-experimental Study" focuses on language learning through immersive technologies, without any relation to organisational structures or armed forces. By [15], "Ecuadorian Air Force: On the Road to Multidomain. A Transdisciplinary Analysis of Complexity", despite its focus on a military institution, exhibits a geostrategic emphasis and does not prioritise scientific research as a transformative axis.

In their 2022 publication, [16] explore the concept of "Global and Local Knowledge for English Language Learning: A Study at a National Police School", focuses on English language learning in a police academy, without any connection to institutional transformation or the Army as the institution under study. In [17] have utilised the PLS model to explore the dynamics of HRM. The moderating roles of self-efficacy and organisational commitment in work engagement and talent turnover intention" addresses human resource dynamics in a general organisational context, without mentioning the defence sector or the use of research as a driver of institutional change. [18] provide an analysis of "Gender Education of Cadets in Higher Education Institutions of the Ukrainian Security Forces" [Gender Education of Cadets in Higher Education Institutions of the Ukrainian Security Forces]. While the focus of this analysis is on the Ukrainian security forces, it is pertinent to note that the analysis does not address the structural role of scientific research.

Following a thorough review of the abstracts, it was determined that the subsequent studies were to be excluded from consideration. While some of these studies were conducted within academic or institutional settings, it was observed that they failed to directly address the relationship between scientific research and institutional transformation within the military context. Additionally, these studies did not take into account the key variables that have been established in this review. In [19], "The Academic Performance of Cadets at the National Air Force Academy of the Republic of Angola," whilst situated in a military environment, focuses on the academic performance of cadets without analysing the role of scientific research as a driver of institutional change [19]. By[20] conducted an examination of approaches to material hardship classification.

Cross-sectional and longitudinal perspectives" addresses issues of social and economic classification, without any connection to military institutions or organisational transformation processes linked to research. In [21] conducted a study on the impact of Faculty Development Programmes (FDPs) on professional efficacy in developing countries. A comparative study among participants and non-participants of FDP in Bangladesh," focuses on faculty development programs in educational institutions in Bangladesh, without any connection to the armed forces or institutional change processes derived from scientific research. According to [22]. "A Librarian's Perspective on Sci-Hub's Impact on Users and the Library," undertakes an analysis of the impact of Sci-Hub on access to information. Notably, the analysis does not make any thematic connection to institutional transformation or the military environment.

By [23], "Preliminary investigation and analysis of the impact of the Sudan War on higher education and scientific research sectors", whilst mentioning scientific research, is situated within a context of conflict and general educational crisis, without exploring its structural role in processes of reform or institutional transformation in military environments [23]. Following a comprehensive review of the full text, the following studies were excluded from further consideration. While these sources initially appeared relevant due to their references to academic, scientific, or military contexts, it was determined that they did not meet the specific criteria of analytical depth, thematic relevance, and alignment with the central variables of this research. According to [24], "Analysis, classification, and philosophical foundations of critical thinking models", whilst providing valuable conceptual reflection on critical thinking, does not link its contributions to institutional development or the military or armed forces environment.

In [25], "Salvador Mazza, military doctor. Analysis of his professional career and scientific production in the Argentine Army Health Service," while focusing on a figure in the military sphere and his scientific output, takes a more historical and biographical approach than an analytical one regarding the impact of said output on contemporary institutional transformation processes. In the 2024 publication entitled "Educational Capital and International Mobility:", Khan provides a comprehensive analysis of the impact of educational capital on international mobility. A Bourdieusian inquiry into choosing peripheral higher education destinations," develops a sociological approach to international educational mobility from a Bourdieusian perspective, but does not consider the role of scientific research within military organisations or its institutional impact.

The selected studies were included in this systematic review because they directly address topics related to the academic and scientific environment in military contexts, such as training in military institutions, professional performance, educational innovation, organisational climate, the development of research capabilities, and strategic planning within the armed forces. All of the studies meet the established criteria for thematic and methodological relevance, as they explore key variables related to institutional transformation through scientific research. Furthermore, they present a solid methodological structure, offer relevant theoretical frameworks, and provide empirical contributions that strengthen the understanding of the role of academic research as a driver of change and modernisation within the Army and other armed institutions. In this regard, a table (Table 1) is presented with the main characteristics of the selected research.

Table 1: Characteristics of the studies analyzed according to the PRISMA methodology.

Authors and year	Title	Aim	Methodology	Results
Palma & Andrade (2020) [26]	Adaptação ao ensino superior militar: preditores do sucesso académico	To identify and characterize the stressors present in the effort to adapt to military higher education, analyzing how they evolve over the years and constitute possible predictors of academic success.	Quantitative, cross-sectional and applied approach, with both descriptive and explanatory objectives.	The longitudinal nature of the study emphasizes the results obtained and suggests that, in subsequent studies, correlations should be established with measures of self-esteem and performance as official measures in an operational context.
Shang (2021) [27]	Research on the Construction of Sci-tech Periodicals in Military Academies Based on Spearman Correlation Analysis of Academic Evaluation Index	Analyze the overall influence of scientific and technological (sci-tech) journals from military academies and how factors such as the proportion of funded articles affect their impact factor.	Quantitative approach Indicators such as total citation frequency, proportion of funded articles, external citation rate, and impact factor were collected and analyzed.	It was identified that the overall influence of these journals still needs improvement The proportion of funded articles has a positive effect on the impact factor.
Espitia Cubillos, Agudelo Calderon & Ramirez Contreras (2021) [28]	Perceptions of technological innovations in the Colombian Army	To detect expectations regarding innovative trends based on the perceptions of active members of the Army.	Approach: Mixed, combining interviews (qualitative) and surveys (quantitative). Scope of research: Exploratory and descriptive. Design: Cross-sectional experimental.	All the categories studied are important and cannot be eliminated or grouped into another or others, and those related to the defense of the community and the territory are of greatest interest to the participants of the study.
Marchisio & Spinello (2021) [29]	Internationalizatio n for Enhancing the European Security and Defence Higher Education	Identify which internationalization initiatives and policies can be developed and how they should be implemented to strengthen Higher Education in Security and Defense in Europe.	The experiences of the University of Turin over the past seven academic years were analyzed. Both quantitative and qualitative data were used.	The study highlights the positive impact of these initiatives on the development of academic networks and intercultural skills.
Reyes, Ariza, Alves (2021) [30]	Moral development in educational contexts: A systematic review	Identify the evidence available in the scientific literature related to the study of moral	Bibliographic database searches were conducted using predetermined search criteria,	The results suggest the influence of the educational context on moral development, from all levels of educational

		development in educational contexts.	following the PRISMA methodology.	training, encouraging the development of studies that enrich the scientific discussion.
Semenenko, Kirsanov & Chernyshova (2022) [31]	A Mathematical Model to Determine the Optimal Ratio of Researchers of Different Categories for Solving a Scientific Problem in the Military Sphere	To propose a variant of a mathematical model that justifies the optimal proportion of researchers from different categories to carry out scientific research of the highest possible quality, within a context of limited resources.	The methodology is based on the formulation of a mathematical model that describes the relationship between the quality of scientific research and the number of researchers, using a canonical parabola equation. The method of Lagrange multipliers is employed.	The results of the numerical experiment validate the usefulness of the model for improving research planning and performance in military institutions.
Surkov (2022) [32]	Elaboration of a method for strategic analysis of the development of the Armed Forces	Determine (clarify) the long-term strategy for developing the capabilities of the Armed Forces.	The methodology employs a conceptual approach that combines the selection of priority areas for capacity building with a recursively organized computational process.	The SADAF-RW method provides objective and quantifiable assessments of the effectiveness of strategic decisions, projecting the expected effects of the selected strategies.
Candumbo, Caimbo & Varona (2022) [33]	Pedagogical foundations of the professional military performance of the human resources of the Angolan Army Academy	To assess the pedagogical foundations of the professional military performance process of the human resources of the Military Academy of the Army (AMEX) of the Republic of Angola.	Using a qualitative methodology, documentary research is used to refer to the norms that support postgraduate education.	The pedagogical foundations of the advanced education theory regarding the professional military performance of human resources and its structuring in the practice of military education were identified.
Yahupov, Bielikov, Tkachenko (2023) [34]	Lifelong learning: models and methods of implementation	To present results of scientific research aimed at improving the efficiency of the educational process within the framework of continuing education, addressing key issues such as the development of organizational skills, adult education, foreign language learning, university professional development and receptiveness to change.	Various methodological approaches were used depending on the chapter. These included pedagogical experiments to analyze the development of organizational skills in military cadets, comparative analyses between the educational systems of Ukraine and Sweden, the design and implementation of innovative models such as the flipped classroom and methodologies based on technological immersion, as well as studies on university management and corporate training using active methods and coaching.	The studies made it possible to demonstrate progress in the development of key components of organizational competence in cadets, identify global and local trends in adult education, and propose effective models for language learning in multicultural contexts.
Calderón, Godoy, Marrero (2023) [35]	Validation of an Organizational Climate Scale in a Military Higher Education Institution: Implications for Research and Practice	Measuring the organizational climate in military higher education institutions in Ecuador.	The research is framed within the positivist paradigm. It employs a quantitative approach. The type of research is descriptive. The research design is based on a cross-sectional approach.	This study contributes to the understanding of the organizational climate in military higher education institutions in Ecuador and may have implications for the management and improvement of educational quality in the context of higher education in Ecuador.
Espiñeira, Muñoz & Garcia (2023) [36]	Perceptions and effectiveness of plagiarism detection mechanisms in Spanish, Portuguese and Ibero-American	To analyze the practices and perceptions regarding plagiarism detection in Ibero-American Social Sciences scientific journals indexed in Scopus, identifying the tools used, the editorial rejection	A mixed-methods approach was used.	The study revealed that most journals use plagiarism detection software, although there are doubts about its effectiveness.

	social science journals	criteria, and the effectiveness of current preventive measures.		
Kuchinski (2023) [37]	Exploring Perceptions on the Influences of Mentor-Mentee Relationships on Graduate-Student Learning	To explore graduate students' perceptions of how mentor-mentee relationships influence their learning within the U.S. Army's Master of Military Arts (MMAS) program.	A qualitative design of multiple case studies was used.	The study provides useful evidence to better understand the role of mentoring in academic settings, strengthen teacher development, and prepare mentors and students for their postgraduate academic journey.
Kuchinski (2024) [38]	A dinâmica da política de ensino: Uma perspectiva global da educação	To explore the dynamics of teaching politics in education at a global level, identifying approaches, challenges and good practices to assess its importance in the context of local political crises and global issues such as climate change, security and peace.	Narrative literature review.	The study provides an overview of the current state of political education in the world and recognizes the dynamics of its teaching.
Fernandez, Miron Sophía (2025) [39]	Contributions of the inductive method to the teaching of military ethics	Evaluate the impact of the Basic Concepts in Military Ethics course and its inductive approach on the attitudes and behaviors of Colombian military personnel.	A quantitative approach methodology was applied.	It was identified that the course had a positive impact on participants' attitudes regarding the importance of military ethics, its contribution to unit cohesion, and its influence on responsible decision-making.

Source: Authors, (2026).

In the domain of military higher education, numerous studies underscore the significance of enhancing academic adaptation, cultivating organisational skills, and fortifying pedagogical foundations. [26] identified stress factors that influence cadets' academic performance. In their 2021 study, [29] emphasised the role of academic internationalisation in the development of cooperation networks and intercultural skills in the European defence and security context. By [33] analysed the pedagogical foundations that underpin the training of military personnel in Angola. In addition, [34] have proposed innovative continuing education models with a view to improving the training efficiency of cadets and military professionals. In their 2023 study, Calderón et al. explored the organisational climate within military higher education institutions, offering practical methodologies to enhance educational standards.

As [37] demonstrated, through a series of case studies, the positive impact of mentorship on the learning of postgraduate students in military arts. By [39] demonstrated that the inductive approach to military ethics instruction fosters unit cohesion and responsible decision-making, thereby contributing to the moral development of military personnel. In the domain of scientific production and knowledge management within military institutions, [27] conducted a comprehensive analysis of the factors that influence the impact of military science and technology journals. The study revealed a direct correlation between the proportion of funded articles and their visibility. According to [36] addressed the issue of plagiarism detection in social science journals in Latin America, highlighting the widespread use of anti-plagiarism software, although with reservations about its effectiveness. In [31] developed a mathematical model to optimise the proportion of researchers based on the expected quality of the research, thus improving scientific planning in contexts with limited resources.

In the domain of technological modernisation and institutional perception, [28] investigated the perceptions of Colombian Army personnel regarding technological innovations, concluding that categories related to territorial defence are the most pertinent for the military. In [32] proposed a computational method (SADAF-RW) for the analysis and projection of the development of Armed Forces capabilities, providing a quantitative tool for long-term decision-making. In the domain of ethical, political and civic education, [30] conducted a systematic review that confirmed the influence of the educational environment on moral development at different levels of education. In the 2024 publication, Khanh (2024) explored the dynamics of teaching politics from a comparative perspective, emphasising its significance in the context of contemporary challenges, including security issues, climate change, and socio-political crises.

IV. DISCUSSION

IV.1 COMPARISON WITH OTHER STUDIES

The present research is distinctive in its adoption of a systemic and institutional perspective, a departure from the approaches of other academic works in this field. In contrast to [26], who address the factors of academic adaptation in cadets from an individual and cross-cutting approach, this work transcends the formative level to analyse how structured research processes impact organisational and doctrinal redesign. According to [39] emphasise the value of the inductive method in military ethics education, this research contends that such methods must be articulated within an institutional culture oriented towards critical thinking, within a cross-cutting axis of modernisation.

In relation to the research conducted by [29] on the internationalisation of defence education, the necessity for inclusive participation is emphasised, and structural reforms that integrate all institutional actors into open and technologically adaptive knowledge policies are proposed. According to [31], [32] have each contributed mathematical models for the optimisation of research and strategic planning. This work draws on these contributions to emphasise that their effectiveness is only guaranteed if they are integrated into a solid institutional science policy with robust normative and ethical structures. In the present study, [35], [34] analyse the impact of organisational climate and individual receptiveness to change. In contrast to the present study, which examines these psychosocial factors in relation to structural, political, and educational variables, this work posits that research should be positioned as a catalyst for organisational change rather than as an isolated effort.

IV.2 IMPLICATIONS OF THE STUDY

It is evident that scientific research, far from being a complementary function, must be institutionalised as a strategic capability that contributes to doctrinal development, evidence-based decision-making, and the professionalisation of military personnel. It is imperative that research policies are accompanied by structures that guarantee academic integrity, methodological validation, and the production of applicable knowledge. By [36] posit that the absence of rigorous control systems can compromise the credibility of scientific products, thereby diminishing their potential to influence real-world decisions. In this sense, the assertion by [33] regarding the need to ground professional development in research processes is fully relevant: advanced science-based training strengthens both operational capacity and institutional legitimacy.

IV.3 ADDED VALUE

In contrast to studies that concentrate on fragmented formative, normative, or technical aspects, this work integrates them to formulate a systemic vision of institutional change. A seminal contribution of this study lies in its establishment of a nexus between organisational culture and research transformation, thereby underscoring the pivotal role of critical thinking, academic mentorship (as articulated by [37]) and strategic political education (as expounded by [38]) as interwoven pillars of military leadership. Moreover, it puts forward an interpretation that is firmly embedded within the Peruvian context, yet with a pronounced emphasis on the opportunities presented by existing human capital, as articulated by [28].

IV.4 RECOMMENDATIONS FOR FUTURE STUDIES

It is recommended that further longitudinal studies be conducted in order to evaluate the real impact of scientific research on operational indicators of the Army. Such indicators may be categorised as follows: logistical effectiveness, deployment capacity, and doctrinal innovation. In the context of Peruvian armed forces, the undertaking of comparative studies among Latin American armed forces with varying degrees of scientific institutionalisation would prove pertinent in order to extract models that are adaptable to the Peruvian context. Another under-explored area is the evaluation of incentive and recognition policies for research within military careers, as well as their impact on the motivation and retention of scientific talent. It is recommended that efforts be undertaken to develop return-on-investment models for military research that evaluate not only the technical impact but also the effect on organisational cohesion, institutional legitimacy, and civil-military cooperation.

V. CONCLUSIONS

Scientific research contributes significantly to institutional transformation in the Peruvian Army by strengthening the academic and professional training of military and civilian personnel through the implementation of strategically planned educational processes that foster critical thinking, ethical reflection, and the generation of relevant knowledge. This process has been shown to enhance curricular content, whilst concomitantly effecting a transformation in the axiological and leadership profile of future officers. This, in turn, serves to promote an organisational culture oriented toward continuous improvement. Institutional transformation driven by research also requires the coordinated participation of multiple actors within the organisation and the adoption of inclusive policies that respond to new realities. This is necessary to guarantee the comprehensive, ethical, and sustainable development of institutional capabilities.

The findings of scientific research have been shown to exert a considerable influence on the processes of modernisation and decision-making in the Peruvian Army. This influence is evidenced by the provision of methodological and quantitative tools that serve to optimise the allocation of resources, enhance strategic planning, and fortify the quality of the knowledge generated. Research facilitates an objective evaluation of institutional capabilities, fosters transparency and effectiveness in decision-making, and contributes to enhancing academic prestige through high-impact publications. Moreover, the scientific and pedagogical training of military personnel fosters an organisational culture predicated on evidence, continuous improvement, and innovation – pivotal aspects for sustainable modernisation and decision-making consistent with contemporary challenges.

The Peruvian Army members' perception of the impact of scientific research on institutional transformation is influenced by a number of factors. These include their level of receptiveness to innovation, the organisational climate, and their training experiences in academic or mentoring contexts. While certain sectors are proactive in their promotion of change by acknowledging the strategic significance of science in the modernisation of procedures, technologies and doctrines, others adopt a more conservative approach due to hierarchical rigidity or structural limitations that impede participation. However, there is a general perception of the Army's innovative potential, based on its skilled and committed human capital and the need to integrate scientific research not only into technical aspects but also into the political and strategic training of personnel. This would promote a comprehensive, critical and adapted institutional transformation to contemporary challenges.

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Conflicts of interest

The research was conducted without any conflicts of interest that could have potentially influenced the results.

Data availability

The data are available to any researcher who wishes to use them for methodological and scientific purposes

VI. AUTHOR'S CONTRIBUTION

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