



The state of the art as a methodological tool: conceptual approaches and criteria for its development.

¹ Laudis Duncan Montaña *, ² María Isabel Gina Cuello Orozco, ³ Liyibeth Lozano Guerrero, ⁴ Arley Denisse Vega Ochoa, ⁵ Liliana Patricia Torres Obregón ⁶ Dilson Agustín Caicedo Suarez.

¹Universidad Popular del Cesar, Colombia. <https://orcid.org/0000-0002-6174-5861> *Corresponding author

² Universidad Popular del Cesar, Colombia. <https://orcid.org/0000-0001-6857-122X>

³Universidad Popular del Cesar, Colombia. <https://orcid.org/0000-0001-9589-6679>

⁴Universidad Popular del Cesar, Colombia. <https://orcid.org/0000-0002-9483-2101>

⁵Universidad Popular del Cesar, Colombia. <https://orcid.org/0000-0003-4266-2099>

⁶Universidad Popular del Cesar, Colombia. <https://orcid.org/0009-0006-5873-4033>

ABSTRACT: The purpose of this review article is to develop an in-depth reflection on the state of the art as a methodological tool within scientific research. From this perspective, the aim is not only to describe its meaning and define its objectives, but also to offer practical guidelines for its proper development. The methodological proposal is framed within the interpretive paradigm, adopting a qualitative approach based on the hermeneutic method, which allows for a critical understanding and interpretation of the theoretical contributions made by various authors on this concept. In particular, the paper analyzes the approaches of Bojacá (2004), Jiménez (2006), Baeza (2008), Guevara (2016), Saldarriaga (2019), Duque (2021), Rivas (2023), and Martínez et al. (2024), who have contributed to the consolidation of the state of the art as a key instrument for identifying research background, mapping knowledge gaps, and strengthening the theoretical foundation in different fields of knowledge.

Keywords: State of the art, research and methodological tool

Received: 10 May 2024

Received: 19 May 2024

Accepted: 04 June 2024

1. Introduction

The development of scientific research demands the articulation of various methodological phases, each of which plays a key role in the rigorous construction of knowledge. Among these phases, the state of the art stands out as a fundamental stage, as it enables the researcher to situate themselves within the academic context of the problem they intend to address, acknowledging the contributions, limitations, and trends of previous studies.

The state of the art also referred to as the state of the question or specialized documentary review—is understood as a qualitative research modality aimed at exploring how a specific topic has been addressed by the scientific community over a given period. This task goes beyond a simple compilation of sources; it involves a systematic process that includes the search, selection, critical reading, analysis, and interpretation of relevant literature, with the goal of building a solid and up-to-date theoretical framework.

From this perspective, the state of the art makes it possible to identify both progress and gaps in the field of study, to delimit the object of research, and to establish conceptual connections among different theoretical positions. As such, it becomes a strategic tool that supports the construction of well-grounded

arguments, guides the formulation of appropriate research objectives and questions, and strengthens the epistemic validity of the academic work.

In short, the state of the art is not merely a preliminary step in the research process, but rather provides essential input to justify the relevance of the study, avoid duplication, and propose innovative approaches that enrich academic debate and contribute to the advancement of knowledge within a specific discipline.

As a documentary research strategy, the state of the art has become a key tool for the systematic analysis of accumulated knowledge on a particular subject. Authors such as Jiménez (2006), Guevara (2016), Saldarriaga (2019), Duque (2021), Rivas (2023), and Martínez et al. (2024) conceive it not only as a summary of background literature, but also as a critical exercise that helps identify gaps, tensions, advancements, and new research paths. Its origins date back to the 1980s, and its use has been strengthened as an autonomous modality, particularly in the social sciences.

Developing a state of the art involves much more than listing sources: it requires analysis, synthesis, careful selection of relevant material, and critical evaluation of its relevance. Authors such as Duque and Rivas stress the importance of applying criteria for inclusion, exclusion, and systematic organization to ensure methodological rigor. This process also enables researchers to delimit the research object, identify theoretical and methodological frameworks, and justify the significance of the chosen problem.

To ensure rigorous development, Martínez (2010) and Rivas (2023) recommend defining a clear topic, formulating a well-structured question or hypothesis, and relying on a solid bibliographic base (at least 10 to 20 recent sources). From these readings, key elements such as theories, methodological approaches, and relevant findings should be extracted and then integrated argumentatively.

Regarding its structure, Martínez et al. (2024) propose five essential components: title, introduction, argumentative development, conclusions, and bibliography. This organization fosters analytical coherence, orderly presentation of ideas, and clarity in the research purpose. Moreover, two citation strategies are highlighted: spatial order (from global to local) and chronological order (from older to more recent works), both useful in illustrating thematic evolution.

Ultimately, the state of the art constitutes an indispensable methodological input that strengthens theoretical foundations, supports decision-making in research design, and contributes to the production of academic work that is critical, robust, and relevant.

2. Methodology

The methodological approach of this text is grounded in the principles of the interpretative paradigm, which allows for an understanding of phenomena from the perspective of the subjects involved, recognizing the richness of context and subjectivity in the construction of knowledge (Martínez et al., 2022). In alignment with this perspective, a qualitative orientation is adopted, which favors a comprehensive analysis and in-depth interpretation of academic discourses concerning the state of the art as a methodological tool.

To this end, the hermeneutic method is employed, conceived as an analytical instrument that enables the rigorous interpretation of texts, theories, and epistemic positions. This methodology allows for a critical reading of the arguments developed by various authors who have reflected on the state of the art, among whom the contributions of Bojacá (2004), Jiménez (2006), Palacio and Múnera (2007), Baeza (2008), Guevara (2016), Saldarriaga (2019), Ramírez and Aliaga (2022), Duque (2023), Rivas (2023), and Martínez et al. (2024) are particularly noteworthy.

These theoretical and methodological references have contributed to conceptualizing the state of the art not merely as a preliminary stage of research, but as a structuring device that enables the identification of gaps, engagement with prior knowledge, and the construction of the theoretical scaffolding of a research project (Salcedo et al., 2022). From this perspective, the methodological reflection aims to delve into the foundations and projections of the state of the art as a key research practice for rigorous academic analysis.

3. Results

3.1. Reflections: Concepts, Meaning, and Objectives

The state of the art, as conceptualized by authors such as Jiménez (2006), Garcés, Patiño, and Torres (2008), Guevara (2016), Saldarriaga (2019), Duque (2021), Rivas (2023), and Martínez et al. (2024), as well as from the critical perspective of the author of this paper, is understood as a specific modality of documentary research aimed at the systematic analysis of accumulated knowledge in a given field. This practice enables the identification of trends, gaps, tensions, and theoretical advances around a research problem. Its origins date back to the late twentieth century, particularly the 1980s, when it began to be used as a tool for information gathering and systematization, especially useful in the social sciences. Over time, its use has been consolidated as an autonomous research process that not only enables the construction of analytical balances but also allows the projection of new avenues for inquiry.

Duque (2021) highlights that developing a state of the art constitutes a critical task of the researcher, aimed at evaluating existing knowledge and identifying what is incomplete, ambiguous, or insufficiently addressed. This exercise, beyond being a simple inventory of sources, becomes a key stage for grounding the research and arguing its relevance.

For his part, Rivas (2023) emphasizes that a well-developed state of the art requires not only analysis and synthesis but also criteria for inclusion, exclusion, and systematic organization to ensure methodological rigor and internal coherence. As a result, this tool decisively contributes to the epistemological and scientific validity of any research project.

Various authors, including Bojacá (2004), Palacio and Múnera (2007), and Baeza (2008), agree that the state of the art also known as the state of the question serves multiple purposes within the research process, which contribute to rigorously structuring the theoretical and methodological framework of a study. First, it enables the establishment of spatiotemporal reference frameworks and the identification of key authors whose contributions have been fundamental to the development of the topic, thus facilitating the contextual and historical delimitation of the problem.

Additionally, the state of the art helps delineate the object of study and its relationship with other related topics, which allows the identification of analytical and auxiliary categories necessary for the construction of the conceptual apparatus. In the same sense, it expands existing knowledge about the problem, offering solid and contextualized arguments that justify the relevance, novelty, and importance of the proposed research.

One of its key contributions lies in the identification of theoretical or empirical gaps in the scientific literature, allowing researchers to pose new perspectives or questions that have not yet been sufficiently addressed. It also facilitates the recognition of methodological strategies used in previous studies, which is useful for guiding one's own methodological decisions and avoiding unnecessary duplication.

Finally, a well-developed state of the art allows the presentation of different critical and interpretative positions on the problem and, based on them, the construction of an argumentative position that enriches academic debate.

Martínez (2010), Rivas (2023), and Martínez et al. (2024) have proposed a series of fundamental guidelines for the rigorous development of the state of the art as a methodological tool within the research process. These authors agree that the process must not be approached improvisedly but instead requires structured planning and a solid theoretical and documentary foundation.

First, it is essential to have a clearly defined topic, which must be explicitly linked to the research problem. From this relationship, an argued approach should be developed that includes a research question, a hypothesis, or a general objective, allowing for the conceptual delimitation of the documentary analysis.

Another essential aspect is an exhaustive literature review, which should involve the critical reading of at least 10 to 20 academic sources including scientific articles, books, and technical documents published

within the last 10 years, thereby ensuring the relevance and currency of the theoretical input. From each text reviewed, it is recommended to extract relevant data such as the author, year of publication, title, objective, theoretical approach, methodology, and key findings.

Subsequently, a selection process must be carried out to choose the most relevant texts, which will be cited and analyzed in depth in the state of the art. It is important to stress that this exercise is not a mere list of summaries or a literal transcription of fragments. On the contrary, it requires a critical, interpretative, and analytical reading that enables the identification of connections, gaps, and tensions in the existing literature.

Only with these clearly defined and systematized elements will the researcher be in a position to draft a coherent, relevant, and methodologically sound state of the art.

3.2. Structure of the State of the Art

The structure proposed by Martínez et al. (2024) offers a clear and coherent guide for the development of the state of the art, by integrating essential components such as the title, introduction, argumentative development, conclusions, and bibliography. This organization facilitates the critical analysis of academic literature and strengthens the documentary research process through a rigorous and reflective approach. Below are the details:

- **Title:** It should be formulated clearly and concisely, and be directly related to the research problem. The title must reflect the thematic and methodological approach of the work and provide the reader with a preliminary idea of the content and scope of the documentary analysis.
- **Introduction:** This section presents the central theme of the state of the art, explicitly articulated with the research question, hypothesis, or general objective of the study. Additionally, it is essential to briefly contextualize the field of study, justify the relevance of the topic, and mention the key authors to be analyzed. The theoretical-methodological approaches used should also be indicated, highlighting whether it is a systematic, hermeneutic, or critical review, within an interpretative paradigm and using a qualitative approach.
- **Development or argumentative body:** This is the core of the document. It contains the author's argumentation around the research problem through analysis, synthesis, and critical interpretation of the literature reviewed. It includes the most relevant theoretical references: scientific articles, theses, specialized books, and other academic sources. The goal is to support a well-founded position, identify research trends, gaps in academic production, conceptual convergences and divergences, and methodological aspects applied in previous studies.
- **Conclusions:** This section should coherently close the argumentative path developed. The author is expected to present final reflections, critical opinions, and suggestions for future research in relation to the issues or gaps identified. A synthesis of the theoretical and methodological findings reviewed can also be provided, assessing their applicability in the current context. It is advisable to include an interpretation of contemporary trends regarding the theories used, methodological approaches, and relevant results in the analyzed documentary corpus.
- **Bibliography:** It must be compiled in an organized manner and follow updated citation guidelines (e.g., APA 7th edition). All academic texts, articles, books, and documents cited or used in the body of the state of the art should be included. It is recommended to prioritize recent sources of high scientific rigor.

3.3. Organization

According to Martínez et al. (2024), when citing references in a state of the art or documentary review, different organizational criteria can be adopted to enhance the coherence and clarity of the text. Two of the most commonly used strategies are spatial order and chronological order, each serving specific purposes within academic analysis:

- **Spatial order:** This citation modality organizes sources based on their geographical or cultural origin, starting with those of broad international or global scope and gradually moving towards regional, national, or local studies. This approach allows the researcher to show how a topic has been addressed in various contexts, enriching the analytical perspective and fostering the construction of a comparative and situated frame of reference.
- **Chronological order:** In this case, the organization of sources follows the timeline of their publication, beginning with the oldest works and progressing to the most recent. This presentation format facilitates the observation of the historical evolution of knowledge on the subject of study, helping to identify shifts in focus, theoretical developments, and current trends, regardless of the origin of the authors.

When used coherently and justifiably, both strategies strengthen the argumentative structure of the research and contribute to the overall solidity of the state of the art by making the bibliographic review path more evident.

4. Discussion

The findings presented enable a deeper understanding of the *state of the art* as a fundamental methodological strategy in scientific research. First, it becomes evident that this practice has evolved from its instrumental use as a documentary systematization technique in the 1980s to being consolidated as a critical and autonomous tool for the analysis of accumulated knowledge. This transformation—highlighted by authors such as Jiménez (2006), Guevara (2016), Rivas (2023), and Martínez et al. (2024)—demonstrates that the *state of the art* no longer merely fulfills an informative function but actively guides the formulation of the research problem, the methodological design, and the theoretical construction of a study.

Duque's (2021) reflection on the evaluative and projective nature of the *state of the art* is particularly relevant, as it emphasizes its capacity not only to record what exists but also to reveal what is absent, poorly formulated, or insufficiently developed. This critical perspective positions the researcher not as a mere compiler of sources, but as an epistemic subject capable of dialoguing with the literature, identifying gaps, and proposing novel research pathways. In this sense, the distinction between a passive and an active *state of the art* gains significant methodological and epistemological relevance.

Additionally, the systematization criteria proposed by Rivas (2023) and Martínez et al. (2024)—such as rigorous source selection, temporal delimitation, thematic organization, and the application of inclusion filters—enhance the scientific character of the *state of the question*. These elements ensure that the exercise is not reduced to a bibliographic summary but rather constitutes a coherent, reflective, and reproducible analytical process. The clear structuring of the text (title, introduction, development, conclusions, and bibliography), proposed by Martínez et al., provides a formal framework that guides the researcher, especially during formative stages.

Furthermore, the discussion highlights the dual role of the *state of the art*: both as a diagnostic tool and a constructive input. Diagnostic, in that it reveals the state of scientific production regarding a specific problem; and constructive, because it enables the argumentative construction of an original position. This dialectical dimension is essential for avoiding redundant research, overcoming outdated theoretical frameworks, and fostering the originality of the research approach.

Finally, the spatial and chronological organizational criteria proposed offer useful alternatives for presenting literature in a way that aligns with the study's objectives. The spatial order allows for the comparison of international, regional, and local approaches, enriching the researcher's perspective; while the chronological order facilitates the observation of the evolution of concepts, approaches, and debates, placing the research problem within a historical trajectory.

Taken together, this discussion confirms that the *state of the art* is not merely a preliminary stage, but a strategic phase that guides and strengthens the entire research process. Its proper development directly impacts the quality, relevance, and epistemological soundness of any scientific research project.

5. Conclusion

In summary, the *state of the question* constitutes a fundamental methodological strategy within the research process, whose central objective is the search, critical review, and interpretative analysis of the existing literature on a specific topic or problem. Far from being a mere compilation of texts, it is a rigorous evaluative exercise that enables the researcher to understand prior theoretical and methodological developments, identify gaps, contradictions, or trends, and firmly justify the relevance of their own research proposal.

From this perspective, the *state of the art* serves a dual function: on the one hand, it documents the academic trajectory of the object of study; on the other, it guides the conceptual and methodological construction of the research to be conducted. To achieve this, a careful and pertinent selection of sources is essential, as well as a clear delimitation of the theoretical problems and methodological approaches within which the research is framed.

Likewise, it can be affirmed that this article serves as a significant pedagogical resource, as it offers readers a practical and comprehensible approach to using the *state of the question* as a methodological tool. Its purposes are made explicit, guidance for its elaboration is provided, and a clear structure is proposed to facilitate its writing in a systematic, critical, and efficient manner.

Ultimately, this document provides a concrete guide for those beginning their journey into academic research, promoting reflective, argumentative, and coherent writing that strengthens both the theoretical foundation and the scientific validity of any research project.

References

- [1] Baeza, J. (2008). Drugs in Latin America. State of the art in drug addiction studies in Argentina, Brazil, Colombia, Chile and Ecuador. Santiago: UCSH. Retrieved from <http://library-digital.ucsh.cl/greenstone/collect/libros/index/assoc/HASHa6fc.dir/drogas.pdf>.
- [2] Bojacá, J. (2004). XYZ pedagogical research State of the Art seedbeds. Bogotá: Santo Tomás de Aquino University.
- [3] Duque J. (2021). The states of the art in social sciences. A path for your writing. Perspectives Magazine N°37, pp. 121-149 DOI: 10.29344/07171714.37.2691
- [4] Garcés, Á., Patiño, C. and Torres, J. (2008). Youth, research and knowledge. State of the art of research on youth reality in Medellín 2004-2006. Medellín: University of Medellín.
- [5] Guzmán, G. A. (2015). Horizontal property, a study as an alternative conflict solution. (U. C. Colombia, Ed.) Retrieved on June 4, 2015, from repository.ucatolica.edu.co:8080/jspui/bitstream/10983/2283/1/LA%20PROPIEDAD%20HORIZONTAL,PERCENTAJE20UN%20STUDIO%20AS%20SOLUCION%20ALTERNATIV.pdf.
- [6] Hernández, S, Fernández, C. and Baptista, P. (2018). Investigation methodology. Mexico, McGraw Hill.
- [7] Life Persona. (2020). State of the art: structure, how to do it, example. Retrieved from: <https://www.lifeder.com/estado-del-arte/>.
- [8] Martínez Barrios, H. E. (2010). *El proceso de investigación científica en la universidad*. Fundación Élite.
- [9] Martínez Barrios, H. E., Salcedo Mosquera, J. D., y Romero Sánchez, A. (2022). Observation as a research technique. (Reflections, types, recommendations and examples). Russian Law Journal, 10(4), 792–798. <https://doi.org/10.52783/rlj.v10i4.4348>
- [10] Martínez, H. E., Pumarejo H. M., Montero M, J., & Monter, E. (2024). State of the art design: Reflections, meaning, objective, structure and example. Russian Law Journal, Vol. 12(1). <https://doi.org/10.52783/rlj.v12i1.3931>
- [11] Palacio, K. and Múnera G. (2007). State of the art of FACTS technology: information collection and <https://reviewofconphil.com>

analysis. (Unpublished degree work). University of Antioquia, Medellín.

- [12] Rivas A. (2023). Complete guide to writing a State of the Art, with practical examples. <https://normasapa.in/estado-del-arte/>
- [13] Salcedo, J., Martínez, H., Urriago, J. y Romero, A. (2022). The theoretical framework in research: meaning, functions, structure and example for its design. Russian Law Journal, 10, 877-884. <https://doi.org/10.52783/rlj.v10i4.4450>
- [14] Segovia P. Basulto O. and Zambrano (2018). EMPIRIA. Journal of Social Sciences Methodology. No. 41 September-December, 2018, pp. 79-102.