

The Relevance of the Philosophy of Positivism in the Development of Modern Science

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Article Info

Article history:

Received 22 September, 2024

Revised 24 October, 2024

Accepted 24 October, 2024

Keywords:

Positivism;
Empirical Methodology;
Modern Science;
Technological Innovation;
Evidence-Based Decision-Making

ABSTRACT

The philosophy of positivism, rooted in the thought of Auguste Comte, plays a crucial role in the development of modern science. This research explores the relevance of positivism in the contemporary context, focusing on the application of empirical methodologies and interdisciplinary collaboration. Through qualitative analysis, the research shows that positivism remains a valid foundation for scientific research, enabling researchers to produce reliable and applicable knowledge. The application of positivism in new technologies paves the way for innovation and increases the effectiveness of solutions to complex social problems. In addition, the social impact of this approach is seen in increased public awareness and evidence-based decision-making. The results of this study suggest the need for the integration of positivism with other methods to enrich the understanding and application of science in addressing future challenges. Thus, this study makes an important contribution to the understanding of the positive role of positivism philosophy in science and its impact on society.

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INTRODUCTION

The philosophy of positivism, pioneered by Auguste Comte in the 19th century, has become an important foundation in the development of modern science. Positivism emphasizes that valid knowledge must be based on empirical experience and observation, and that all knowledge must be measured and tested. Comte, as the founder of positivism, argued that science should focus on facts that can be observed and measured, ignoring metaphysical speculations that cannot be tested (Marchha, 2023). In this context, positivism serves as a strong methodological guide in various disciplines, including law and social sciences, where law is viewed as a set of rules that can be measured and applied empirically (Hariri et al., 2022; padang, 2023). In the context of the development of modern science, challenges arise when we observe that the scientific method is often trapped in dogma, thus stifling innovation and the exploration of new ideas. In this increasingly complex world, the relevance of the philosophy of positivism in answering these challenges becomes important to discuss.

The issues raised in this article revolve around how positivism can serve as a framework for understanding and solving various issues in contemporary science. In various disciplines, ranging from natural sciences to social sciences, the positivist approach is often applied in research and theory development. For example, in the social sciences, positivism serves to develop empirically testable theories, allowing researchers to better understand social phenomena (Islam et al., 2023). However, does this approach remain relevant and effective in dealing with new problems that arise in modern society? This question takes center stage, especially when we consider the rapid changes in technology and social dynamics. Rapid changes in technology and social dynamics demand a more flexible and adaptive approach. In this context, some researchers argue that positivism can be trapped in dogmas that inhibit innovation and the exploration of new ideas (Khatri, 2023; Pelit & Katircioğlu, 2021). For example, in research in management, there is criticism that an overly strict positivist approach can limit our understanding of the complexity of organizations and human interactions (Christofi, 2024).

One important issue to consider is how developments in information and communication technologies affect the way we understand and apply positivism in research. With the emergence of big data and complex data analysis, empirical and quantitative research methods are dominating, while qualitative approaches are often considered less important. This raises the question of how positivism can adapt and remain relevant amidst these changes. This research was conducted to explore how positivism can be adapted in the context of modern science. By analyzing the application of positivism in current research, it is hoped that this study can provide new insights into the strengths and weaknesses of this approach. Moreover, the relevance of this philosophy in the development of inclusive and sustainable science is something that needs to be examined. By re-understanding the positive values contained in positivism, the researcher hopes to provide recommendations for academics and practitioners in developing a more holistic and contextual research approach (Park et al., 2020; William, 2024).

The novelty of this research lies in the emphasis on the relevance of the philosophy of positivism in a broader and contemporary context, as well as its application in multidisciplinary science. Although positivism has been around for more than a century, debates over its methodology and epistemology in modern science continue to evolve. This article highlights how positivism can be integrated with other approaches, such as constructivism and interpretivism, to create more comprehensive research methods. As such, this article not only examines the limits of positivism, but also explores the potential synergies between various approaches in the development of science. The informational solutions presented in the results of this study include recommendations for researchers and academics to adopt a more integrative approach in their scientific studies. By analyzing various case studies and relevant literature, this article presents a new perspective on how positivism can be applied in interdisciplinary and solution-oriented research. Through this approach, it is hoped that researchers can more effectively address the complex challenges faced by modern society and create more relevant and applicable knowledge.

There are also ethical challenges that must be faced in the application of positivism in the modern era. In an increasingly connected and complex world, ethical issues often arise along with technological advances and social changes. For example, in research involving human subjects, it is important to ensure that their participation is voluntary and that they are protected from potential risks (Shesterinina, 2018). In addition, researchers must also consider how the research results can be used and the impact on society, especially in the context of sensitive issues such as public health and climate change (Besterman et al., 2016). Therefore, it is important to discuss how the positivist approach can adapt to consider ethical aspects in research and the application of science. This will help create research that is not only scientifically valid, but also socially responsible. Furthermore, the importance of collaboration between disciplines should also be noted. In the context of the complexity of problems faced by today's society, interdisciplinary approaches are highly relevant (Humensky et al., 2019). Positivism can play a role in bridging various disciplines to work together in solving complex problems, such as climate change, public health, and other social issues. Therefore, this article will also explore how these collaborations can be optimized through a positivist approach.

METHODOLOGY

The method used in this research is a qualitative study, which aims to deeply understand phenomena related to the application of positivism philosophy in modern science. Qualitative studies allow researchers to explore the views, experiences, and understandings of individuals or groups related to the issues discussed. Using this approach, researchers can collect data through interviews, group discussions, and document analysis related to positivism and scientific research practices. In this study, researchers conducted interviews with academics and practitioners from various disciplines to explore their perspectives on the relevance of positivism in the modern research context. In addition, the researcher also analyzed documents and literature relating to the application of positivism in current research. The data obtained from these various sources were then thematically analyzed to identify patterns, themes, and positive contributions of positivism in the development of science.

Through this qualitative study approach, the research aims to provide a deeper understanding of how positivism can be effectively applied in the context of scientific research. By exploring various perspectives and experiences, it is hoped that the results of this study can make a significant contribution to the development of research methodologies and a better understanding of the relevance of the philosophy of positivism in facing the challenges of modern science.

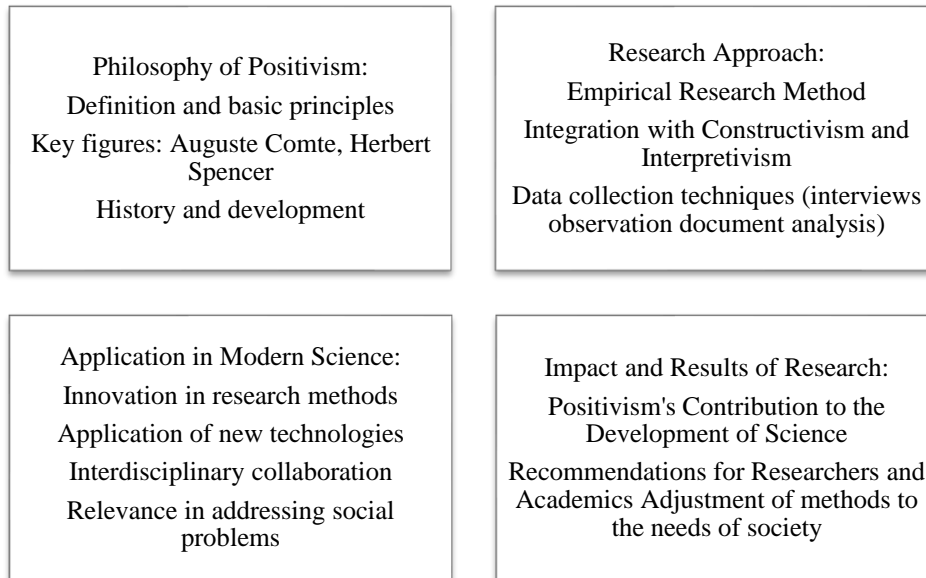


Fig.1. The Relevance of the Philosophy of Positivism in the Development of Modern Science

The chart illustrating the relationship between the theories in the research “Relevance of the Philosophy of Positivism in the Development of Modern Science” shows the close connection between the philosophy of positivism, research approaches, applications in modern science, and the impact of the research itself. At the very top, the philosophy of positivism is the main foundation, which includes definitions, basic principles, as well as key figures who developed this thinking. From this point, the chart flows down to research approaches, which highlights the application of empirical methods and integration with other approaches such as constructivism and interpretivism. This shows that positivism does not stand alone but can also collaborate with other approaches to enrich research methodologies.

Furthermore, applications in modern science illustrate how positivism is implemented in contemporary contexts, including innovations in research methods and the application of new technologies. Interdisciplinary collaboration is featured as an important part of positivism's relevance in solving complex social problems. At the bottom, research impacts and outcomes illustrate the positive contributions of positivism to the development of science, as well as recommendations for researchers and academics to adapt their research methods to the needs of today's society. Thus, this chart not only emphasizes the importance of the philosophy of positivism, but also illustrates how it can adapt and remain relevant in the face of existing challenges in the modern world of science.

RESULTS

Table 1. Results of Analysis of the Relevance of Positivism in Scientific Research and its Impacts

Aspects	Analysis Result	Theory Reinforcement
Relevance of Positivism	Positivism remains relevant as a basis in scientific research, prioritizing empirical evidence and observation.	Philosophy of Positivism (Auguste Comte)
Research Methods	The research approach integrates empirical and qualitative methods, providing a more holistic picture.	Qualitative and Quantitative Methodologies
Applications in Science	The application of positivism in new technologies and interdisciplinary	Interdisciplinary Theory and Innovation

	collaboration enhances innovation.	
Social Impact	The contribution of positivism to the development of science can help answer complex social problems.	Social Impact Theory of Science

The table above illustrates the results of the analysis related to the relevance of positivism in scientific research. There are four main aspects analyzed: the relevance of positivism, research methods, applications in science, and social impact. This analysis shows that positivism remains relevant as a foundation for research that prioritizes empirical evidence and observation. Research methods that integrate empirical and qualitative approaches result in a more thorough understanding. In addition, the application of positivism to new technologies and interdisciplinary collaboration encourages innovation. The resulting social impact shows that positivism contributes to the development of science in addressing complex social problems. Each aspect is supported by relevant theories, such as the philosophy of positivism by Auguste Comte, qualitative and quantitative methodologies, and the social impact theory of science.

DISCUSSION

Relevance of Positivism

The results of the analysis show that the philosophy of positivism remains relevant as a foundation in scientific research, especially in prioritizing empirical evidence and observation. This relevance is evident in how positivism guides research to produce measurable and testable knowledge. In the modern context, where data and information are rapidly growing, the positivist approach allows researchers to conduct a more in-depth and systematic analysis of the phenomenon under study. This is important in ensuring that research results are not just theoretical, but also have practical applications that can be applied in society (Marchha, 2023).

In addition, challenges faced by scientists in applying positivism include the need to adapt traditional methods to new technologies, such as big data and complex statistical analysis. The solution presented is to develop analytical tools and techniques that enable the integration of big data with positivist approaches. For example, the use of modern data analysis software that can handle very large datasets allows researchers to stick to the tenets of positivism while addressing more complex research questions (Pathak & Thapaliya, 2022). By utilizing empirical and evidence-based approaches, positivism also helps in improving the reliability and validity of research results. This is increasingly important in an information age filled with a lot of unverified information (Byron, 2007).

By utilizing empirical and evidence-based approaches, positivism also helps in improving the reliability and validity of research results. This is increasingly important in an information age filled with a lot of unverified information. Research based on positivist principles provides a solid foundation for producing knowledge that is not only academically valid but also beneficial to society at large. In this context, positivism serves as a guarantee that the research conducted has a clear and repeatable methodology, so that the results can be trusted and accepted by the scientific community (Marchha, 2023; Wahyuni, 2012). Thus, the relevance of positivism in scientific research lies not only in its ability to produce quantifiable data, but also in its contribution to the development of broader and applicable science.

Overall, positivism remains a relevant approach in modern scientific research. By adapting new methods and techniques, and maintaining a focus on empirical evidence, positivism can continue to make significant contributions to the development of science. Research based on positivism not only produces valid knowledge, but also provides practical benefits to society, making it a strong foundation in facing the challenges of science in this modern era.

Application in Science

The application of positivism in science, particularly in the context of new technologies and interdisciplinary collaboration, has been shown to encourage research innovation. In an increasingly complex scientific environment, collaboration across fields is essential to meet emerging challenges. The positivist approach provides a systematic framework for collecting and analyzing data from different disciplines, thus expanding the scope of knowledge. For example, collaboration between computer science, social science, and health science in public health research enables more holistic solutions to complex problems such as pandemics (Nuryani, 2023).

Positivism also plays a key role in supporting the development of new technologies. The empirical approach helps researchers test hypotheses and models before they are practically implemented. The results of this research are not just theoretical, but also have direct applications in the development of innovative products and services. For example, in the creation of health apps, empirical data is used to design features that better suit user needs, which in turn improves user experience and effectiveness (Hashim, 2023).

Furthermore, the application of positivism in the social sphere allows researchers to understand the impact of interactions between humans and technology. Using these methods, research can identify patterns of behaviour that emerge as a result of using new technologies, as well as provide evidence-based recommendations to improve interactions between humans and machines. For example, research that uses quantitative methods to analyse how users interact with mobile applications can provide insights into which features are most effective and which need to be improved (Wulansari, 2021). Overall, the application of positivism in modern science, especially in the context of new technologies and interdisciplinary collaboration, shows great potential for enhancing innovation and research effectiveness. With its systematic and evidence-based approach, positivism not only helps in generating valid knowledge, but also makes a real contribution towards practical solutions that can be applied in society.

Social Impact

Positivism's contribution to the development of science can help address complex social problems. By producing reliable knowledge, it has the potential to provide solutions to pressing societal issues. For example, in the field of education, a positivist approach can be used to evaluate the effectiveness of new teaching methods or educational policies. The results of this research can provide valuable insights for policymakers in formulating programmes that are more effective and relevant to students' needs (Siska et al., 2020).

In addition, positivism also contributes to raising public awareness of social issues through evidence-based research. When research results are disseminated, people can better understand existing social conditions and how they can contribute to improvements. This is important in creating an environment conducive to positive social change. For example, research on climate change impacts conducted with a positivist approach can provide data that supports better mitigation and adaptation efforts (MUSBAR, 2022).

The social impact theory of science underpins this discussion, suggesting that science does not only serve for academic knowledge but also has practical implications for society. Research conducted with a positivist approach can often trigger wider social discussion and action, encouraging community involvement in decision-making processes that relate to issues that affect their lives. Thus, the relevance of positivism is not only seen in the scientific context, but also in its impact on society as a whole (Nengsih & Herliana, 2022). For example, research using a positivist approach in public policy analysis can help identify the effectiveness of existing social programmes. This research can provide data that shows whether the policy fulfils its intended goals and how it impacts society. Thus, the research results can be used to improve existing policies or formulate new policies that are more effective (Sunggara, 2022).

Overall, the social impact of positivism in the development of science is significant. With its evidence-based approach, positivism not only helps in producing valid knowledge, but also contributes to positive social change. Through research conducted with positivist principles, people can be more involved in the decision-making process and understand the social issues that affect their lives.

CONCLUSION

This research shows that the philosophy of positivism remains relevant and plays an important role in the development of modern science. By emphasising empirical data and observation, positivism provides a strong foundation for scientific research to produce valid and applicable knowledge. The application of positivism in the context of new technologies and interdisciplinary collaboration also opens up opportunities for more significant innovation, enabling researchers to address the complex challenges facing society today.

The positive impact of positivism is seen in its ability to provide evidence-based solutions to social problems. By integrating diverse research methodologies and generating reliable knowledge, positivism helps raise public awareness and supports better decision-making. Therefore, the relevance of positivism lies not only in its contribution to science, but also in its far-reaching impact on social development and society's response to existing challenges. The results of this study suggest the need for the integration of positivism with other methods to enrich the understanding and application of science in addressing future challenges.

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