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IMPLEMENTATION OF ONTOLOGY, EPISTEMOLOGY, AND AXIOLOGY IN MANAGEMENT SCIENCE

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Abstract

This article analyzes the implementation of the philosophy of science epistemology, ontology, and axiology in management science through a literature review. The findings show that epistemology provides guidance regarding validity and data collection methods, ontology helps in understanding the nature of organizational reality, and axiology ensures that research is conducted ethically and makes significant practical contributions. Methodological approaches commonly used in management research, such as positivism, post-positivism and mixed methods, demonstrate the relevance of scientific paradigms in understanding organizational complexity. The implications of these findings include contributing to the development of new paradigms in management science and providing practical guidance for more valid, relevant, and ethical research. The article confirms that philosophy of science not only builds theoretical foundations, but also enhances the quality of management research, enabling the development of scientific work that benefits both the academic community and organizational practice. Recommendations are given for integrating philosophy of science in research education and training to improve the relevance and impact of future research outcomes.

Keywords: Philosophy of Science, Epistemology, Ontology, Axiology, Management Research

1. INTRODUCTION

There is a difference between the historical development of philosophy and the history of science. The history of philosophy has a non-linear nature, where previous ideas can reappear and be discussed again at a later time. In contrast, the history of science tends to develop progressively forward. In the development of human knowledge, philosophy has a fundamental role as the root or source of various branches of science(). Over time, the various fields of science have progressively become more specialized and independent. Nevertheless, when science is unable to provide answers to various life problems, humans still rely on philosophy as a solution. The relationship between philosophy and science is complementary, both move in parallel and are connected to each other. In the search for truth, philosophy and science have a complementary intersection - where science plays a role in describing the phenomena of the universe, while philosophy functions to interpret it. According

to Wiyono (2016), truth in philosophy can be found through the process of thought, while scientific truth is based on empirical experience. Philosophy is the foundation and system of thought used to seek truth through deep thinking to the root of the problem. In the process, philosophy examines objects derived from empirically observable reality. This study is carried out to find the essence or essence of the truth of a matter using a methodological approach known as the scientific method, which produces scientific truth.

The search for ultimate truth is the main goal of philosophy. When these truths are arranged in a structured and methodical way, an organized system of philosophy is formed. This system consists of three main branches: the theory of knowledge, the theory of nature, and the theory of value. Science, which is born from the human thinking process, acts as a civilization illuminator that helps humans understand their existence and live a more meaningful life. As stated by Chasanah in 2017, when humans are faced with various questions in their minds, this encourages them to think critically, ask questions, and try to find answers about various phenomena that exist. This process ultimately shapes humans into beings who constantly seek the truth (Chasana, 2017).

The development of science is based on three fundamental questions: what objects are to be understood, what methods are used to gain that understanding, and what is the significance or value of the knowledge gained. Although these questions seem simple, they actually contain very basic and complex issues. As Munip (2024) explains, answering these questions requires a deep thinking approach to the root of the problem (radical), structured (systematic), and comprehensive (universal). This approach is the basis of scientific truth studied in the philosophy of science.

Philosophy of science is a discipline that seeks to provide philosophical explanations to various fundamental questions about science, as well as conduct in-depth analysis of aspects related to science. The main focus of philosophy of science is to examine the essence or nature of science, which includes three fundamental aspects: ontology (the nature of existence), epistemology (theory of knowledge), and axiology (theory of value), these three aspects become the main foundation in studying philosophy of science (Batubara 2017). The research conducted aims to determine the Implementation of Ontology, Epistemology and Axiology in Management Science.

2. METHODS

This study applies the literature research methodology, an approach that focuses on the process of collecting and analyzing various literature sources to understand and identify key concepts in the philosophy of science and their implementation in the field of management. This method was chosen for its ability to provide a comprehensive understanding of existing theories and their relevance to the research objectives. This research used several main

reference sources consisting of research articles, reference books, and various other supporting sources related to the research theme. For research articles, the collection process was conducted through searches in various scientific publication databases, including academic journals and Google Scholar. In processing the collected data, this research uses a qualitative analysis approach that includes three stages: data reduction process to filter out relevant information, structured presentation of data, and formulation of conclusions from the analysis results. The selection of the sources was based on three main criteria: relevance to the research topic, quality of the sources, and significance of their contribution to understanding the relationship between philosophy of science and management science.

3. RESULT AND DISCUSSION

Definition of Ontology in Management Science

Ontology is concerned with the nature of reality, epistemology with the nature of knowledge, methodology with the way in which investigations are conducted, and ethics with the moral position taken by organizational actors and researchers, which must be expressly stated in their actions. When researchers analyze organizations, their assumptions, methodological choices, even their writing style, can be viewed as the result of epistemological and ontological orientations, not just as technical choices. The way of thinking underlying the methodology, as well as the philosophical and political stance adopted by the researcher, influences their approach to defining, analyzing and explaining socio-organizational problems (Mir & Greenwood, 2022).

According to Hussein (2019) in an article entitled The Nexus Between Philosophy and Science highlights the important role of philosophy in shaping the understanding of the existence and relationships between entities in science. In the context of management, this is particularly relevant for understanding how organizations and individuals are viewed within an ontological framework. Philosophy provides a foundation for explaining the nature of organizations, as well as the way these entities interact and function in the managerial world, thus providing deeper insights in analysis and problem solving in management. Meanwhile, Xiuyuan et al (2010) in their article entitled "Integrated Transportation Hub (ITH) Organization Management and Methodology Models" emphasize the importance of integrating a systems approach in transportation management. From an ontological perspective, this article shows how complex systems, such as transportation, are understood as interconnected and mutually influencing entities in organizational reality. This understanding helps describe the relationships between parts of the larger system and how the interactions between these elements contribute to the effectiveness and sustainability of organizational operations.

Definition of Episметology in Management Science

Epistemology, as a branch of philosophy, studies and contributes to the theory of knowledge by considering the nature and definition of knowledge as truth within certain boundaries, while ontology focuses on defining the nature of existence, entities that can exist, as well as categories in groups, hierarchies, or divisions. Clarification of epistemological assumptions is no less important than ontology. In the synthesis of epistemological approaches to organization theory, there is the idea that knowledge is a true and justified belief, which comes from Plato's view. However, what counts as knowledge and how it is epistemologically described needs to be clarified. The epistemological position includes questions about what can be considered as evidence in research, whether the knowledge gained is considered value-free or contextual and value-laden, and what is the relationship between subject and object. For example, if it is believed that humans (such as managers) produce organizational outcomes (such as performance), then researchers see managers as subjects and performance as objects. However, in other contexts, if economic factors are strong enough to influence human behavior, this subject-object relationship can be reversed (Wong et al., 2011).

According to Fišar et al. (2023) in an article entitled Reproducibility in Management Science emphasized the importance of transparency and repeatability in management research. The implementation of Data Disclosure and Code policies is a crucial step to ensure the reliability of research findings. In the context of epistemology, this illustrates how transparency serves as the basis for scientific validation. Meanwhile, according to Davis et al (2022) in an article entitled "A Replication Study of Operations Management Experiments in Management Science" emphasizes the importance of replication in management science. In the context of epistemology, replication serves as a way to test the validity of the knowledge produced, by ensuring that the findings obtained can be retested and provide consistent results. This article reflects the epistemological need to ensure that theories in management are not only theoretically valid, but can also be tested and accounted for through replicable experiments, thus strengthening their credibility and accuracy in managerial practice.

Definition of Axiology in Management Science

Axiology is a branch of philosophy that deals with values, particularly the values involved in scientific research and practice. In the context of research, axiology touches on the question of what values researchers should hold while carrying out their duties, and how these values affect the process and results of research. The axiology of science includes normative values that give meaning to the truth or reality encountered in human life, which involves various dimensions such as social, symbolic, and physical-material. In addition, axiology also emphasizes the importance of these values as conditions that cannot be ignored (conditio sine

qua non) that must be obeyed in conducting research and in the application of science (Sanprayogi & Chaer, 2017).

According to Michalak (2020) in his article entitled "Cost of Capital and Risk in Management and Quality Science", decision making in organizations is guided by ethical values and sustainability. In addition, Hartati et al. (2024) in their article "The Role of Philosophy of Science in Creating a Profile of Pancasila Students in Indonesia" provide insights into how value-based education can influence practices in organizations. Both articles illustrate the important role of values in shaping policies and decisions in managerial and educational contexts.

The Role of Ontology in Science

Ontology plays an important role in framing research by helping scientists define objects of study and understand their existence. In the natural sciences, objects such as atoms, cells or planets are treated as real physical entities, while in the social sciences, concepts such as culture, economics or society are often considered social constructs. In addition, ontological assumptions influence the scientific methods used in research. If one believes that social reality is shaped by human interaction, a constructivist ontological view, then qualitative research methods such as interviews and participatory observation may be more appropriate. On the other hand, if social phenomena are thought to be studied like natural phenomena, an ontological realism view, then quantitative methods are more appropriate. Ontology also helps in clarifying the boundaries of science by determining what can or cannot be studied through scientific methods, so that scientific claims can be limited to things that can be verified or observed (Luthfiyah & Lhobir, 2023).

The Role of Epistemology in Science

In the philosophy of science, epistemology plays a crucial role because it determines how science is constructed and the extent to which scientific claims can be trusted. Science, as a process for understanding the world, requires a strong epistemological foundation. Epistemology helps formulate the scientific methods used to acquire knowledge, such as empirical methods involving observation, experimentation, and data collection, which are based on the assumption that knowledge of the world is gained through experience and observation. In addition, epistemology serves to evaluate and validate scientific knowledge, providing a framework for answering questions about whether or not scientific claims are valid, as well as how to ensure that the results of research or experiments reflect reality.

Epistemology also helps distinguish science from pseudoscience, emphasizing that valid science is based on empirical and rational proof, while pseudoscience often lacks a strong epistemological justification. The issue of skepticism, which questions whether we can know anything with certainty, is also addressed in epistemology, posing a challenge for scientists to

provide evidence strong enough to ensure that the knowledge gained is truly trustworthy. In addition, epistemology plays a role in shaping scientific paradigms, as described by Thomas Kuhn, which consist of beliefs, assumptions and methods accepted within a scientific community, based on an epistemological understanding of how knowledge is acquired and validated in a particular discipline (Jasnain et al., 2022).

The Role of Axiology in Science

Axiology is the branch of philosophy that studies values, including ethical values (what is good or bad) and aesthetic values (what is beautiful or ugly). In the context of philosophy of science, axiology focuses on questions related to value and ethics in the process and application of science. More specifically, axiology in the philosophy of science examines the values inherent in science, how science is used for certain purposes, and the ethical consequences of the application of science (Hidayat, 2016).

Implementation of Ontology in Management Science

The implementation of ontology in management science plays an important role in understanding the nature of reality, existence, and entities that are objects of management, such as organizations, people, work processes, and business environments. Ontology helps managers understand organizations not only as formal structures, but also as dynamic social entities, consisting of individuals, groups, cultures, and interactions that are constantly evolving. With this understanding, managers can design systems and strategies that better suit the needs and realities of the organization. In addition, ontology highlights people as a central element in management, not just as resources, but as individuals with unique goals, values, and motivations, which help create a work environment that supports individual growth as well as the achievement of organizational goals.

In the context of systems and processes, ontology also teaches that work systems and operational processes are dynamic and must be designed with flexibility to respond to changes that occur in the business world. In addition, understanding the external environment such as markets, competitors, and regulations, is also part of the management ontology, which helps organizations to adapt to change.

With the application of ontology, management science becomes more reflective and reality-oriented, allowing managers to understand the complexity of the world of work, make wiser decisions, and create sustainable solutions.

Implementation of Epistemology in Management Science

The implementation of epistemology in management science plays an important role in determining methods and approaches to obtain, understand, and apply knowledge in managing organizations. Epistemology helps management science identify various relevant sources of knowledge, such as empirical experience gained from observing real situations in

organizations, theoretical knowledge developed through scientific research, and practical insights gained from direct practice in the field. With this understanding, managers can combine theory and practice to produce more informed decisions.

In addition, epistemology also emphasizes the information collection methods used, such as quantitative research to analyze numerical data, qualitative research to understand organizational behavior and culture, and the use of information technology to process big data that supports decision making. Epistemology also teaches the importance of validating knowledge before it is applied in management, which is done through pilot projects, risk analysis, and scientific studies to ensure the relevance and reliability of knowledge. The knowledge gained is then applied in decision-making to develop innovative business strategies, improve operational efficiency, and create a work environment that is adaptive to change. In addition, epistemology encourages continuous learning through training, regular evaluation, and skill development to remain relevant in changing business situations.

By integrating epistemology, management science is able to develop a critical and systematic knowledge-based approach, resulting in better decisions and supporting organizational success.

Implementation of Axiology in Management Science

The implementation of axiology in management science plays an important role in building a system that is oriented towards ethics, morality, and sustainability. Axiology ensures that managerial decisions are not only focused on financial gain, but also consider their impact on society and the environment. For example, managers are taught to choose business partners who carry out ethical practices and avoid strategies that could harm employees, consumers or the general public. In addition, axiology is also reflected in the implementation of corporate social responsibility (CSR), which includes programs that support education, health, and the environment, as well as the integration of sustainable business practices to protect natural resources. In organizations, axiology helps build a work culture based on positive values such as honesty in financial reports, transparency in decision-making, and fairness in reward systems and employee management. In the context of employee well-being, axiology encourages management to provide living wages, create a safe, inclusive work environment, and support personal development.

In addition, axiology also supports business sustainability by encouraging organizations to reduce carbon emissions and production waste, and contribute to environmental preservation through environmentally friendly innovations. Finally, relationships with stakeholders such as employees, consumers, investors, and society should be based on the principles of mutual respect and fairness, with the aim of building long-term mutually beneficial relationships.

4. CONCLUSIONS

Management science as a complex discipline requires a philosophical approach to strengthen its basis and application. By integrating ontology, epistemology, and axiology, management can develop into a more holistic science that focuses on reality, knowledge, and values. Ontology allows managers to understand the nature of managed entities, such as organizations, people, and work systems, and view organizations as dynamic entities that are influenced by social interactions and external environmental factors.

Epistemology provides the basis for the process of systematically acquiring, validating and applying knowledge, enabling managers to use scientific methods and technology to support data- and fact-based decision-making. Axiology, meanwhile, emphasizes values, ethics and social responsibility in managerial practice, ensuring that decisions are not only profit-oriented, but also consider the well-being of employees, society and the environment in a sustainable manner. These three dimensions complement each other, forming a solid framework in management science, which not only helps organizations achieve efficiency and effectiveness, but also contributes to broader social development.

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