

# Chapter 16

## Optimizing Data Governance via Triple Helix Model: A Systematic Review and Bibliometric Analysis

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### ABSTRACT

*This study evaluates the Triple Helix Model as a framework for improving data governance in the digital age. As data management grows more complex with technological advancements, collaboration among government, academia, and industry is essential. A systematic review and bibliometric analysis identify trends, scholarly contributions, and citation networks related to the Triple Helix Model and data governance. Data from the Scopus database were selected using PRISMA guidelines to ensure quality and relevance. Results showed a significant increase in publications from 2019 to 2022, reflecting growing interest in data governance. Key publications appeared in “Sustainability Switzerland” and “Internet Policy Review,” with major contributions from Europe and the United States. A concept network visualization showed links between innovation and data governance, emphasizing collaboration. The study concludes the Triple Helix Model optimizes data governance and provides insights for policymakers and practitioners.*

### INTRODUCTION

How governments, businesses, and academic institutions handle data has changed significantly in the digital age. Information security, privacy, and integrity are all at risk due to the growing complexity of data governance. One possible strategy to deal with these issues is the Triple Helix Model, which prioritizes cooperation between the public, private, and academic sectors. Nonetheless, prior research highlights shortcomings in implementing this paradigm: the absence of privacy protection, data interoperability,

DOI: 10.4018/979-8-3693-9286-7.ch016

and legislation that facilitates cross-sector cooperation (Benfeldt et al., 2020; Zhou & Etzkowitz, 2021). Innovative strategies that might promote theoretical and practical synergy are needed to close these gaps.

One adaptable and creative way to close the gap between data governance theory and reality is the Triple Helix Model. To provide more sustainable data governance, the model facilitates complementary cross-sector connections. In this regard, the model makes it easier for players to work together and provides a framework for strategic approaches to significant problems, including regulatory misalignment, inadequate data security, and the requirement for a comprehensive policy approach.

First, this study examines how the Triple Helix Model can enhance data governance in the digital age, leading to creative solutions for handling ever-more complex data. Second, it looks at mapping research trends and their geographic distribution. Third, it looks at the dominant themes and subtopics related to data governance, using citation network analysis to find research patterns and identify gaps in the literature important contributions made by scholars, organizations, and nations to developing data governance based on the Triple Helix Model. This study offers a more thorough global understanding.

The research also highlights how technological innovations, such as artificial intelligence (AI), big data, and blockchain, can support the implementation of the Triple Helix Model. These technologies enable more accurate data analysis, better interoperability, and strengthened data security. Meanwhile, public policy is an important element that ensures the sustainability of data governance through regulations that support innovation, cross-sector collaboration, and the protection of people's privacy.

Therefore, this research makes a significant theoretical contribution and offers a practical framework to improve the efficiency and effectiveness of data governance in the digital era. With a Triple Helix Model-based approach, this research creates opportunities to build an adaptive, ethical, innovative data governance ecosystem. The findings of this research are expected to assist government, industry, and academia in designing better collaborative strategies to address the challenges of privacy, security, and information management in the digital age.

This research highlights the novelty aspect by combining an interdisciplinary approach that integrates a systematic review and bibliometric analysis to evaluate the Triple Helix model's effectiveness in data governance. The justification for this research lies in the urgency to find more innovative and effective solutions for managing data in the digital era, where challenges related to data security, privacy, and integrity continue to increase. As such, this research is expected to provide new insights that enrich data governance literature and practices and offer guidance for stakeholders to implement the Triple Helix model more effectively.

## **LITERATURE REVIEW**

### **Conceptualization of the Triple Helix Model**

Etzkowitz and Leydesdorff's Triple Helix model is crucial for encouraging cross-sector collaboration-based innovation. The three primary actors in the model—government, business, and academia—all play significant roles. According to (Etzkowitz & Leydesdorff, 1998), academia produces theoretical knowledge and auxiliary procedures, the industry offers technological solutions, and the government is

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