



Scientometric Analysis for Supply Chain Audit

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Abstract. The significance of Supply Chain Audit is crucial, functioning as both a metric for assessing internal organizational performance and a vital mechanism for enhancing global corporate accountability. This paper investigates the role and impact of Supply Chain Audit. Initially, it constructs a scientific framework for Supply Chain Audit through a retrospect and analysis of relevant literature, revealing a gradual increase in research from 1999 to 2022, predominantly driven by contributions from the United States. Subsequently, factor analysis is utilized to illuminate the importance of Supply Chain Audit. In conclusion, the study asserts that Supply Chain Audit is very important in the global supply chain market, it is pointed out that it is positively correlated with the income of supply chain market, and outlines essential directions for future research.

Keywords: Supply Chain Audit, Scientometric Analysis, Accountability

1 Introduction

Over the past decade, auditing has increasingly played a role in strengthening global corporate accountability and in shaping corporate responsibility norms, which have changed from an instrument for corporations to track internal organizational performance to an instrument that goes beyond governance[1]. Supply chain improvement programs designed for supply chain audits can be enhanced by integrating change management practices [2]. Without regard to industry generalities, auditor supply chain knowledge refers to a specialized comprehension of processes and information related to audit and accounting issues related to a supplier and its major customers, which can help to understand the complexities associated with the earnings cycle[3]. The diagnostic stage is the core element of audit. It is only when he truly provides a thorough understanding of how the components of an organization, including technology, people, and processes, interact with each other, that systems and interactions are conditioned, and how these interactions are reflected in market-driven key performance, that an audit can be considered successful[4]. We analyze the traditional audit process in relation to a technology-enhanced audit procedure, establishing a structured framework to create a study for question under discussion that connects technology-driven auditing to the

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accuracy and promptness of the audit procedure. This, in turn, enhances social and environmental performance within supply chains[5].

The risk created by the customer can be propagated throughout the supply chain, and this issue highlights the need for the auditor to pay close attention to the information of the audited company and his client, such is the real impact[6]. Globally-oriented corporations are pyramidally obligated to assess durative risks and practices within their supply chains. This heightened responsibility has resulted in a surge in supplier sustainability audit initiatives and a notable increase in sustainability-focused initiatives and associations[7]. A two-echelon supply chain consisting of suppliers and retailers is studied, which is coordinated by revenue-sharing contracts. Suppliers use probabilistic auditing to check the dishonest behavior of retailers, so as to avoid the loss of revenue caused by such omission[8]. Accord with client default elevating the audit venture for the supplier, we discover that there is a positive correlation between the major customer's breach of contract and the audit cost of the supplier company. This correlation applies to both external and internal data breaches[9]. Supply chain sustainability has moved beyond sustainability performance approaches, and the use of digital technologies can enhance supply chain resilience and human rights[10].

2 Data and Methods

To investigate Supply Chain Audit, this paper employs scientific visual analysis. Scientific visualization is a method and technique that transforms data from scientific calculations into graphical representations displayed on screen. It combines technologies from various fields, encompassing computer graphics, digital image processing, computer vision, computer-aided design, and human-computer interaction.

To gather information on the impact and role of Supply Chain Audit, we executed the following advanced search query in WoS: TS= ("supply chain") and TS=("Audit"). As of July 12, 2024, a total of 285 articles (comprising SCI-EXPANDED, SSCI, A&HCI, and ESCI) were collected. The results were then analyzed and visualized using Bibliometrix.

3 Research Findings

To objectively analyze the role of Supply Chain Audit, we conduct a scientific visual analysis of the data across several dimensions: annual trends, relationships among key countries, keywords, and sources, primary themes, and factor analysis.

3.1 Workflow of the Research

Figure 1 reveals this article's four stages of the research design: including the descriptive overview and cluster analysis, the visualization stage, and the data story to provide the empirical basis or evidence.

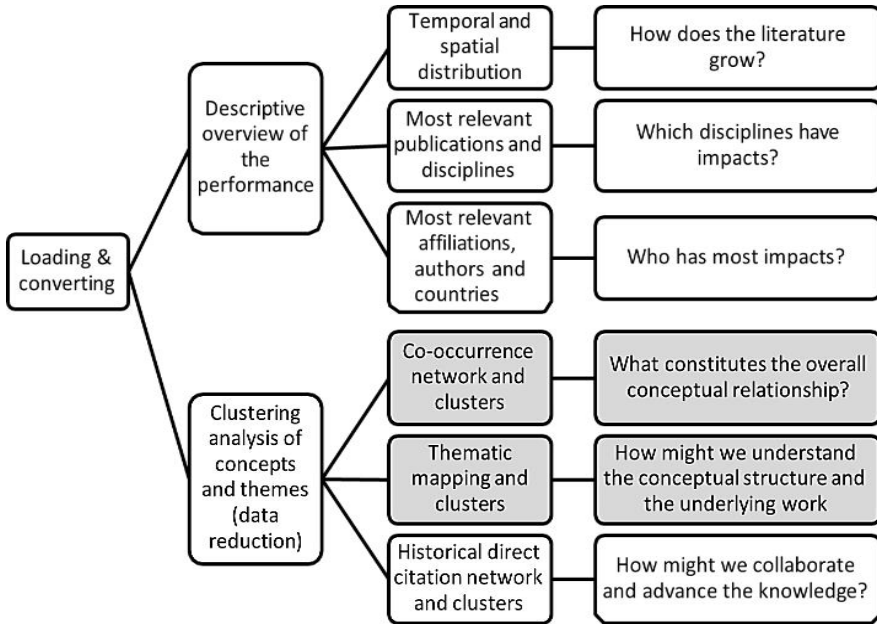


Fig. 1. Workflow of the research

3.2 Annual Trend

Statistics indicate that from 1999 to 2018, relevant research outputs were limited, though the overall trend was upward. Between 2018 and 2020, there was a rapid increase, peaking in 2020 before declining. However, another peak was reached in 2021-2022. Subsequently, the data exhibited a sharp decline.

3.3 Main Countries, Keywords, and Sources

Figure 2 effectively visualizes the network of authors, publishing countries, and sources, highlighting the relationships between major countries, keywords, and sources. Key contributors include the United States, the United Kingdom, China, Australia, Canada, and New Zealand, with the United States making the most notable contributions. This indicates that various nations have conducted targeted studies on the impact and role of Supply Chain Audit.

The keywords "supply chain" and "audit" dominate the literature, while related topics such as supply chain management, sustainability, blockchain, auditing, game theory, supply, and corporate social responsibility also appear. This diversity highlights the richness and potential for exploration in this research area.

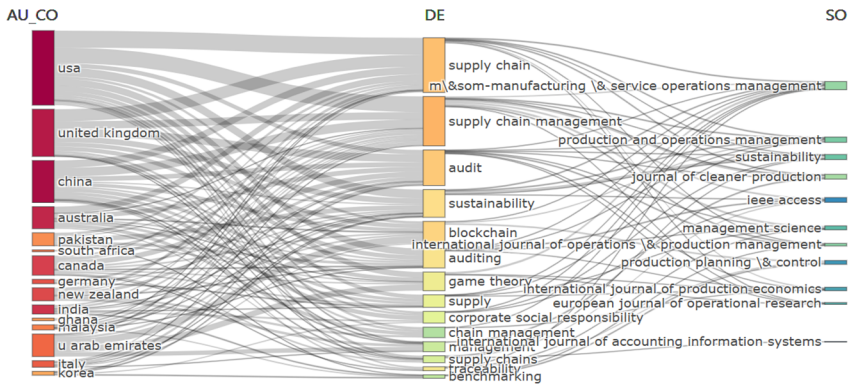


Fig. 2. Main countries, keywords, and sources map

3.4 Main Theme

Figure 3 illustrates that both supply chain and audit play crucial roles in this field. While the development of auditing is less mature than that of the supply chain, neither has yielded particularly significant advancements. This indexes that the impact of Supply Chain Audit is intricately connected to the overall supply chain dynamics.

Research on related themes, such as performance, impact, management, and corporate social responsibility, also holds considerable importance. However, areas like stress, dynamics, networks, and farming face challenges in achieving substantial progress within this domain.

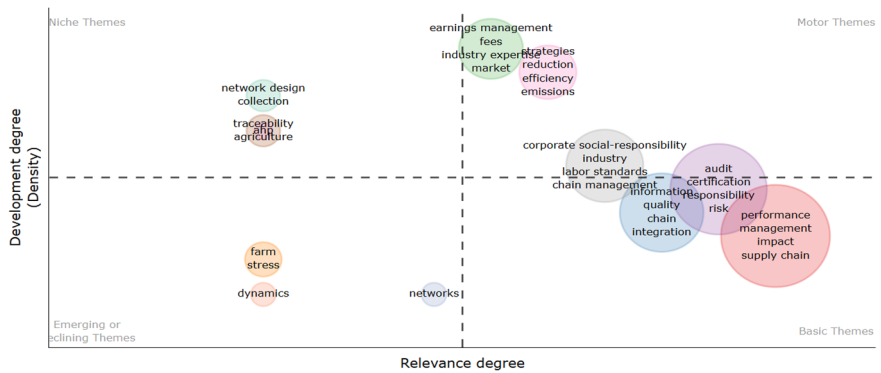


Fig. 3. Theme map

3.5 Factor Analysis

Figure 4 demonstrates that supply chain and audit are positioned closely together, underscoring that auditing plays a positively correlated role in the supply chain. Additionally, the link between management and the supply chain reflects a strong relationship. Moreover, keywords such as performance, model, and chain are located near the center of the graph, indicating they have garnered significant attention.

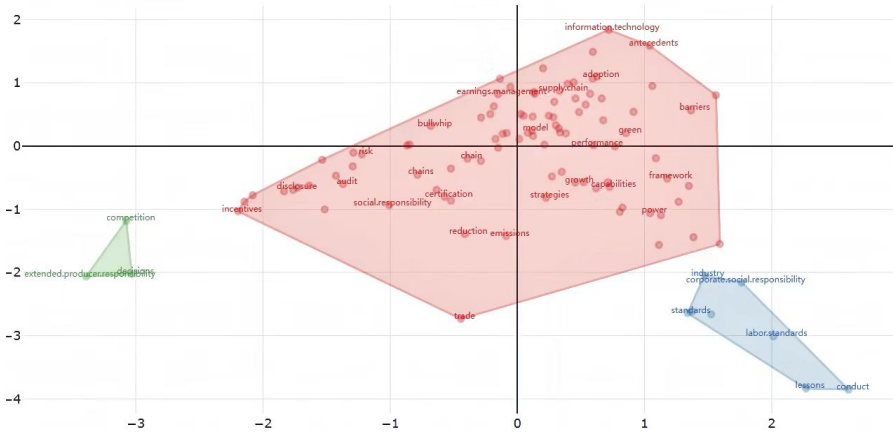


Fig. 4. Factor analysis map

4 Conclusion

This paper employs scientific visual analysis to systematically explore the significance and Supply Chain Audit. Data analysis reveals a gradual increase in research related to supply chain and auditing from 1999 to 2022, with the United States contributing the most significant findings. Additionally, the study identifies key themes and keywords, highlighting supply chain management, sustainability, blockchain, auditing, game theory, and corporate social responsibility as central topics, which underscores the field's richness and substantial exploratory potential.

In the factor analysis section, this paper reveals the important role of Supply Chain Audit. The findings demonstrate that auditing positively influences supply chain management and is highly correlated with keywords such as supply chain performance and management models. Moreover, the research indicates that data breaches in client firms can bring increased audit costs for their suppliers, further underscoring the significance of Supply Chain Audit. Third-party risk assessment organizations can perform thorough risk evaluations and monitoring for the supply chain, as well as implement an early warning system to identify and address potential risks promptly. Overall, this paper highly emphasizes the importance of Supply Chain Audit and offers valuable insights and directions for future research.

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