

Bibliometric Study on The Role of Management Accounting in Business Decision Making in the Manufacturing Industry

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ABSTRACT

This bibliometric analysis explores the evolving field of management accounting by examining the co-occurrence of keywords in the literature from the past two decades. Using VOSviewer, the study maps the interconnections between traditional and emerging themes within management accounting, revealing a significant shift from conventional practices to a broader focus that incorporates strategic decision-making, technological advancements, and sustainability concerns. The visualization highlights the central role of traditional terms like cost and financial management while underscoring the growing importance of big data, artificial intelligence, and environmental management. The findings illustrate the discipline's response to the complexities of modern business environments, emphasizing the need for management accountants to develop skills in strategic analysis, technology, and sustainability integration. The study not only provides insights into the thematic evolution of the field but also suggests directions for future research and the necessary adaptation of professional training and education in management accounting.

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1. INTRODUCTION

Management accounting is essential in the manufacturing sector, acting as a key component for strategic planning and operational oversight. Historically, management accounting has concentrated on cost control, planning, and internal financial reporting, equipping managers with essential information for informed decision-making [1]. Nevertheless, the expansion of the global business environment, marked by heightened rivalry and technical progress, has considerably expanded the scope of

management accounting. Contemporary management accounting includes several elements such as performance evaluation, value chain analysis, and the incorporation of information technology, rendering it more strategic and analytical [2].

The importance of management accounting in improving decision-making within the manufacturing industry is paramount. It enables companies to adjust to swiftly evolving market conditions by supplying essential data for operational efficiency and strategic agility [3]. Cost accounting techniques are employed not only

to ascertain product costs but also to manage and mitigate expenses, consequently affecting pricing strategies and profitability. The use of advanced analytics into management accounting systems has facilitated deeper insights into product profitability, client preferences, and supply chain vulnerabilities [4].

Despite the apparent advances in the field, the adoption and effective utilization of contemporary management accounting practices in the manufacturing sector vary widely. Many firms still rely on traditional accounting practices, which may not provide adequate support for decision-making in today's dynamic business environment [5]. This disparity can be attributed to several factors, including organizational culture, the complexity of new accounting tools, and resistance to change among staff. Furthermore, the lack of alignment between management accounting systems and business strategies can impede the ability of these tools to deliver valuable insights [6].

Emerging trends in management accounting, such as sustainability accounting and the integration of environmental, social, and governance (ESG) factors into accounting practices, are reshaping the landscape [7]. These developments reflect a broader shift towards more responsible and sustainable business operations, demanding a reevaluation of traditional roles and methodologies in management accounting within the manufacturing industry. These evolving practices not only provide traditional financial insights but also contribute to the strategic management of non-financial determinants of corporate value [8].

Although the significance and dynamic nature of management accounting are acknowledged, empirical research indicates that numerous manufacturing organizations have not fully utilized contemporary management accounting approaches in their decision-making processes [3]. The underutilization or inadequate implementation of these practices may impede a firm's capacity to make

informed decisions, thus impacting its strategic goals and competitive standing in the market. The challenge is exacerbated by the swift evolution of technology and global market dynamics, necessitating ongoing adaptation and revision of management accounting methods. This study seeks to examine the degree of implementation and the influence of management accounting procedures on decision-making in the manufacturing sector.

The purpose of this bibliometric study is to examine the current literature about the role of management accounting in business decision-making within the manufacturing sector. This review will delineate the principal themes, methodological frameworks, and deficiencies in the literature, offering a thorough overview of the impact of management accounting procedures on strategic and operational decision-making. The study aims to identify trends and changes in management accounting research over the last twenty years, providing insights into the evolution of methods and their implementation in the manufacturing sector.

2. LITERATURE REVIEW

2.1 *The Evolving Role of Management Accounting*

Management accounting has evolved from a solely operational emphasis to a more strategic function within the manufacturing industry. Originally focused on cost measurement and internal budget controls, it now includes strategic decision support, risk management, and performance evaluation [9]. [2] contend that this transition has mostly been propelled by the necessity for enhanced company agility and more profound insights into financial and operational indicators. The evolution is marked by the incorporation of sophisticated technology like ERP systems, which enable real-time data analysis and forecasting, thus improving decision-making processes [10]. Furthermore, [11] explore the impact of management accounting on value chain analysis and supply chain decision-

making. Their research indicates that effective management accounting practices are crucial for identifying cost drivers and assessing operational efficiencies across the supply chain. This ability to pinpoint inefficiencies allows companies to refine their production processes, optimize inventory levels, and improve overall profitability.

2.2 Integration of Technology in Management Accounting

The adoption of information technology in management accounting has been a significant trend in the last decade. [4] detail how modern management accounting systems are increasingly leveraging big data analytics to provide more nuanced insights into market trends, production costs, and customer behavior. These systems enable predictive analytics and scenario planning, which are vital for strategic planning and risk management. However, [3] points out that the integration of these technologies presents challenges, including substantial initial investment costs and the need for specialized skills among accounting personnel. A critical analysis by [7] addresses the role of sustainability accounting, highlighting how manufacturing firms integrate environmental and social governance (ESG) factors into their accounting practices. This integration aids companies in aligning their operations with sustainable development goals, which is increasingly important to stakeholders. Davis's study underscores that while sustainability accounting is gaining traction, its adoption is uneven across the sector, often correlating with corporate size and regulatory environment.

2.3 Challenges in Modern Management Accounting Practices

Despite technological advancements, several studies indicate a gap between the potential of modern management accounting tools and their actual utilization in the manufacturing sector. [6] identifies resistance to change, cultural factors, and lack of training as significant barriers to the adoption of advanced management accounting practices. Similarly, [1] examines the organizational challenges associated with updating

traditional accounting systems, including the alignment of new systems with existing financial and operational goals. [12] discuss the implications of these challenges for decision-making. Their research suggests that the effectiveness of management accounting practices is contingent upon the integration of these systems into broader strategic frameworks. Companies that successfully align their management accounting practices with their strategic goals tend to experience improved decision-making capabilities and better overall performance.

2.3 Impact of Management Accounting on Business Decisions

The literature consistently shows that effective management accounting practices have a direct impact on the quality of business decisions. [8] analyze case studies where management accounting has directly influenced strategic decisions, leading to enhanced market responsiveness and improved financial performance. These case studies illustrate how detailed cost analysis and performance metrics can guide significant business decisions, from pricing strategies to capital investments. Furthermore, a study by [2] emphasizes the role of management accounting in operational decision-making. It demonstrates how real-time data provided by modern management accounting systems supports operational managers in making timely decisions that align with corporate strategy and market demands.

3. METHODS

This bibliometric study will utilize comprehensive data from Scopus Database, to analyze the existing literature on the role of management accounting in decision-making within the manufacturing industry. The analysis will span articles published from 2000 to the present to capture the evolution and trends in the field. We will employ VOSviewer for mapping and visualizing bibliometric networks, focusing on co-citation, co-authorship, and keyword occurrences. This software will help identify

the most influential studies, authors, and journals, as well as the interconnections between them. Additionally, the bibliometric data will be supplemented by a content analysis of the most cited papers to extract

detailed insights into the methodologies, findings, and themes prevalent in the field.

4. RESULTS AND DISCUSSION

4.1 Yearly Publication

Documents by year

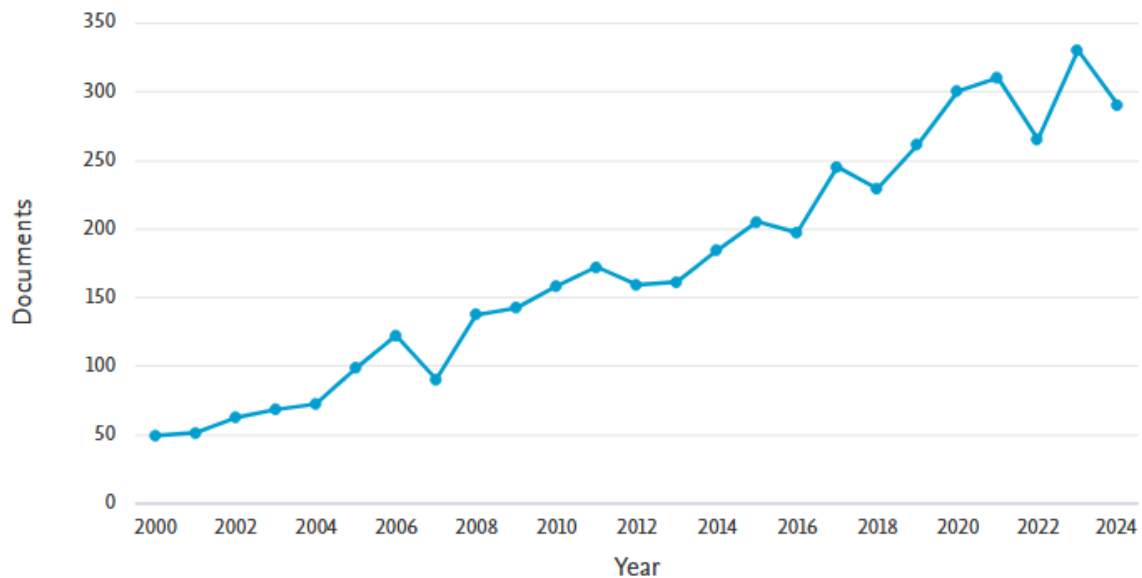


Figure 1. Yearly Publication

Source: Scopus Data Analysis, 2024

The graph illustrates the number of documents published annually from the year 2000 to 2024, showcasing a general upward trend in publications over the 24-year period. Initially, the number of documents started at a relatively low point, with fewer than 50 publications in 2000, and exhibited gradual growth up to about 100 documents by 2006. The publications saw a more pronounced increase from 2010 onwards, reaching around 150 documents and continuing to rise steadily

to over 300 by 2022. The year 2023 shows a slight decline in publications, suggesting a temporary dip or stabilization in research output. The trend reflects growing interest and expanded research activities in this field over the last two decades, with notable acceleration in the last 12 years, likely driven by advancements in the field, increased funding, or greater recognition of the topic's importance.

4.2 Author Collaboration

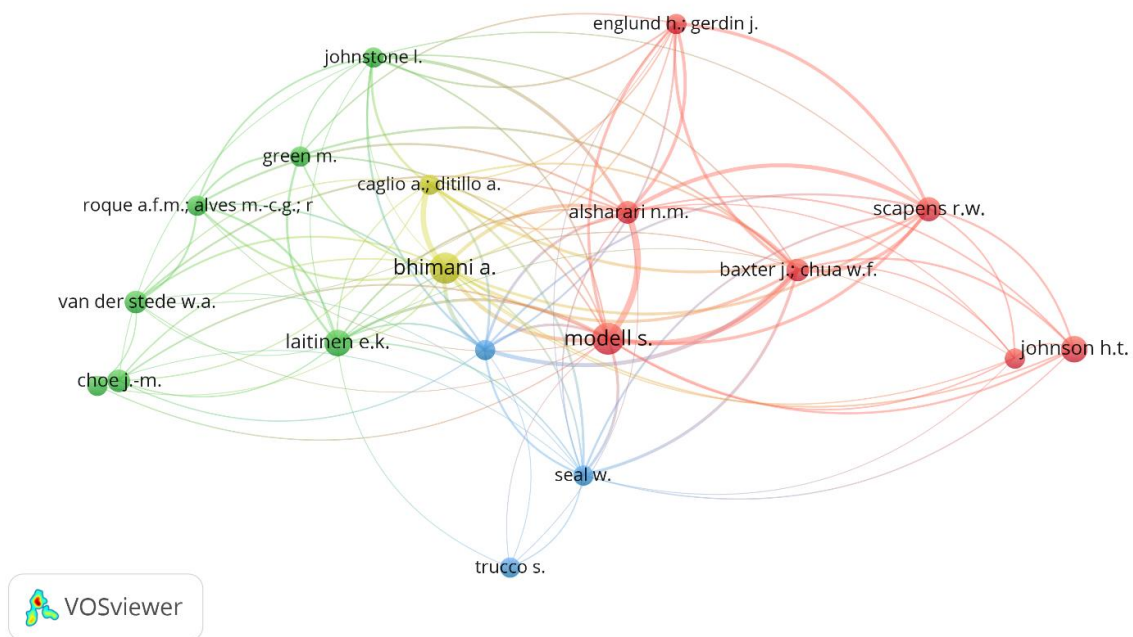


Figure 2. Author Collaboration Network

Source: Data Analysis, 2024

This visualization represents an author collaboration network in the field of management accounting. It shows various nodes, each representing a different author, with lines connecting them indicating collaborative relationships. The size of each node appears to correlate with the author's centrality in the network, suggesting the volume or impact of their collaborative efforts. Authors like Johnson H.T. and Modell S. are depicted with larger nodes and more connections, highlighting their central role in the network, potentially indicating they are key contributors or highly influential within this research community. The network is

color-coded to possibly signify different clusters or subfields within management accounting, where each color represents a group of researchers frequently collaborating or working within the same niche. For instance, the cluster in red, featuring Johnson H.T. and Chua W.F., might focus on a specific aspect of management accounting such as strategic management accounting or performance measurement systems. The blue and green clusters could represent other specializations or sub-disciplines, such as cost accounting or sustainability accounting, respectively.

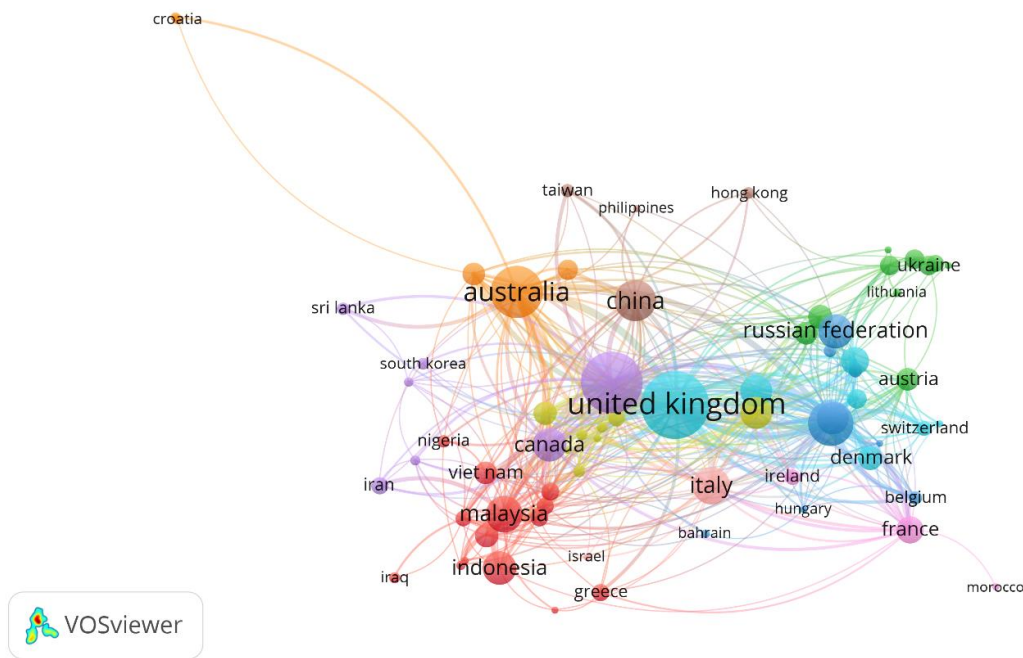


Figure 3. Country Collaboration Network

Source: Data Analysis, 2024

This VOSviewer visualization represents a country collaboration network, illustrating the interconnectedness and collaborative relationships between different countries in a specific academic or research field. Each node, labeled with a country name, represents the geographical origin of research contributions, and the size of each node likely indicates the volume of research output or the centrality of the country in the global research network. The lines connecting the nodes symbolize collaborations, with thicker lines suggesting stronger or more frequent collaborations between countries.

Key nodes such as the United Kingdom, United States, China, and Australia

appear prominently, suggesting that these countries are major hubs in the research network, likely due to their robust academic infrastructures and high levels of international collaboration. The color coding might denote different regions or continents, which groups countries based on geographical proximity or possibly similar research interests and collaborative patterns. The visualization also highlights lesser-connected nodes, such as Croatia and Sri Lanka, which may represent emerging or niche contributors to the field.

4.3 Citation Analysis

Table 1. Top Cited Literature

Citations	Author's	Title
946	[13]	Management control systems as a package-Opportunities, challenges and research directions
785	[14]	Conceptualizing management accounting change: An institutional framework
772	[15]	The design and use of performance management systems: An extended framework for analysis
548	[16]	Doing qualitative field research in management accounting: Positioning data to contribute to theory
517	[17]	Supply Chain 2.0: Managing supply chains in the era of turbulence
483	[18]	Sustainability accounting and reporting: Fad or trend?

402	[19]	The role of actor-networks and boundary objects in management accounting change: A field study of an implementation of activity-based costing
389	[20]	Eco-control: The influence of management control systems on environmental and economic performance
387	[21]	The use of partial least squares structural equation modelling (PLS-SEM) in management accounting research: Directions for future theory development
381	[22]	The limits of accountability

4.4 Keyword Co-Occurrence Analysis

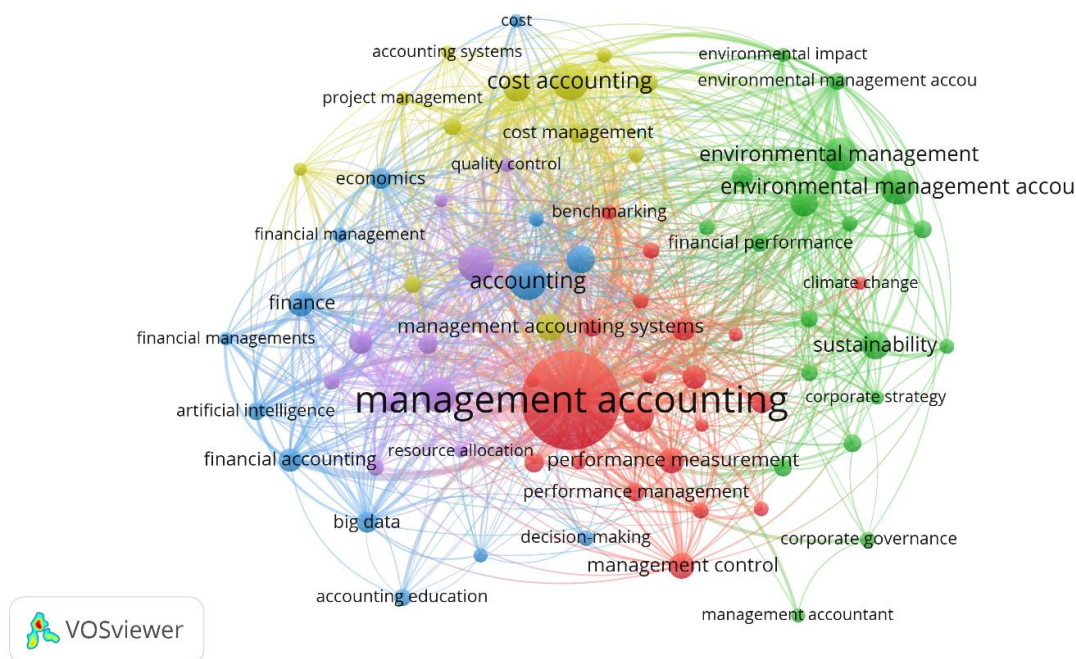


Figure 4. Network Visualization

Source: Data Analysis, 2024

This VOSviewer visualization depicts a keyword co-occurrence network within the realm of management accounting research. The nodes represent keywords that frequently appear in the literature, with the size of each node indicating the prevalence or significance of the keyword within the field. Lines connecting the nodes demonstrate the relationships between these keywords, with thicker lines representing stronger associations or more frequent co-occurrences in the literature. This visual mapping provides a panoramic view of the conceptual landscape of management accounting, highlighting both central themes and peripheral topics.

The network is color-coded to represent different thematic clusters within management accounting. The central and most prominent cluster, in red, focuses on core topics directly related to "management accounting" and includes related terms such as "performance measurement," "management control," and "decision-making." This cluster illustrates the primary focus areas of the field, emphasizing the role of management accounting in organizational decision support and control mechanisms. These concepts are crucial for understanding how management accounting practices integrate with strategic and operational objectives to enhance organizational performance.

sustained importance over the years. Notably, topics such as "sustainability" and "environmental management," shown in lighter colors towards the yellow spectrum, indicate a growing emphasis in later years. This shift reflects the broader academic and professional push towards integrating sustainability into business practices, responding to increasing global concerns about environmental impacts and corporate

responsibility. The peripheral topics, such as "big data" and "artificial intelligence," appear in a transitional color, suggesting that these areas gained traction within the academic discourse around the mid-2010s. This emergence aligns with the technological advancements influencing management accounting, such as enhanced data analytics capabilities and AI-driven decision-support systems.

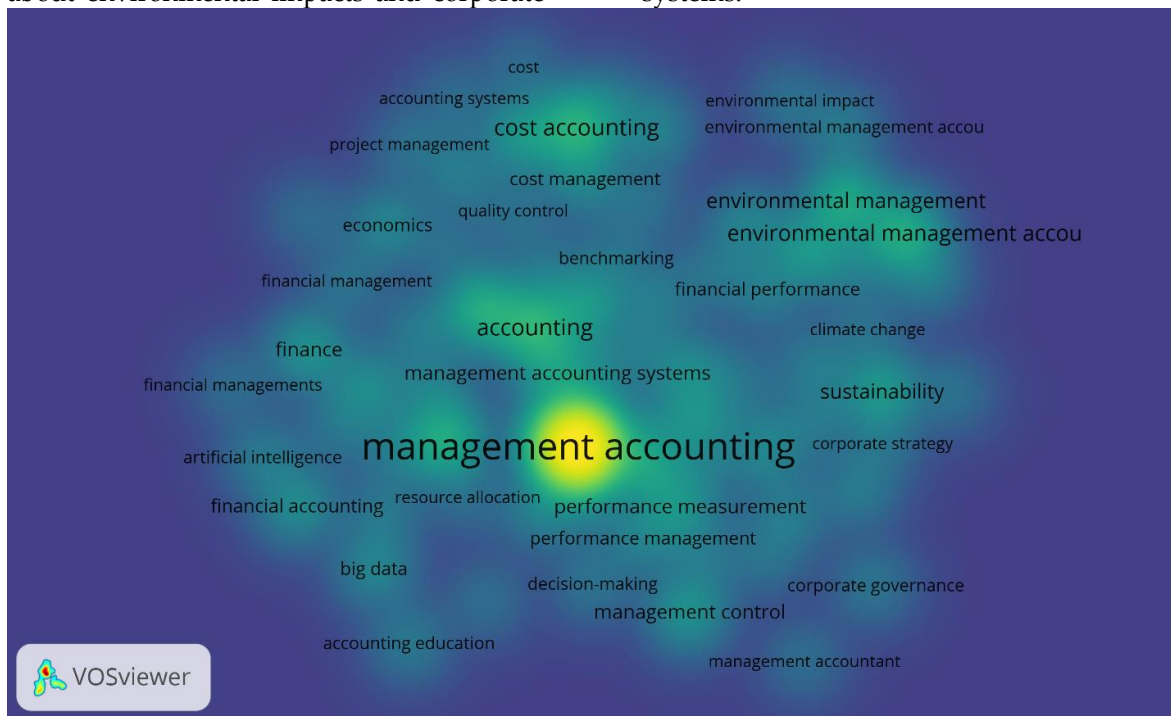


Figure 6. Density Visualization

Source: Data Analysis, 2024

This VOSviewer visualization showcases a keyword co-occurrence map focused on the field of management accounting, highlighting the diversity and interconnectivity of themes within the discipline. Central to the visualization is the term "management accounting," indicating its fundamental role in the research and discussion captured across various studies. Surrounding keywords such as "cost accounting," "financial management," and "corporate governance" illustrate core areas that traditionally define the scope of management accounting. Additionally, emerging areas like "big data" and "artificial intelligence" reflect the evolving nature of the field, integrating modern technological advancements that enhance analytical

capabilities and decision-making processes. The arrangement and proximity of terms like "sustainability," "environmental management," and "climate change" adjacent to traditional management accounting terms suggest a growing trend in the literature that integrates environmental concerns within the scope of management accounting. This shift is indicative of a broader movement towards sustainability in business practices, where management accounting plays a crucial role in measuring, reporting, and driving corporate sustainability efforts.

DISCUSSION

Integration of Traditional and Strategic Management Accounting Practices

At the core of the visualization is 'management accounting,' a term that remains

central to the discipline. Traditional areas such as 'cost accounting,' 'financial management,' and 'corporate governance' remain pivotal, demonstrating their continued relevance in both academia and practice. This persistence reflects the foundational role of cost management and internal control in supporting business operations and ensuring financial stability. However, emerging prominently in the network are terms like 'performance management,' 'resource allocation,' and 'decision-making.' These terms signify a shift towards a more strategic orientation in management accounting. As Kaplan and Atkinson (2020) suggest, the role of management accountants has evolved from recording and controlling costs to a broader focus that includes shaping strategic decisions that drive future financial and operational performance. This transition is evident in the emphasis on performance measurement systems that not only assess past performances but also guide future strategic directions.

Technological Advances and Management Accounting

The emergence of keywords such as 'big data' and 'artificial intelligence' in the network reflects the impact of technological advances on management accounting. The integration of these technologies into management accounting practices is not just a trend but a fundamental shift that enhances analytical capabilities and supports more complex decision-making processes. Brown and Kim (2020) discuss how big data analytics enables management accountants to provide more accurate and timely insights, improving forecasting and strategic planning. Similarly, the use of artificial intelligence in predictive analytics and automation of routine tasks can lead to more efficient operations and richer insights, thus enhancing the strategic value of management accounting. This technological integration has led to the development of sophisticated management information systems that support dynamic and complex analytical tasks. As the data landscape grows in volume and complexity, the skills required

of management accountants are also evolving. There is a growing need for professionals who are not only proficient in traditional accounting practices but are also adept at navigating advanced data analytics tools and interpreting complex datasets within a strategic business context.

Sustainability and Environmental Management

Another notable shift highlighted in the visualization is the increasing importance of 'sustainability' and 'environmental management' within management accounting. This trend is indicative of a broader societal and regulatory push towards sustainable development and corporate social responsibility. Management accounting is increasingly being called upon to develop frameworks that can integrate environmental and social governance (ESG) factors into business operations. The linkage between 'management accounting' and 'sustainability' reflects an expansion of the accountant's role to include the measurement, reporting, and analysis of sustainability performance. Companies are integrating ESG factors into their strategic planning and performance management systems, a process that requires the adaptation of traditional accounting practices to new sustainability-oriented approaches. This integration not only helps companies manage risks and capitalize on opportunities related to sustainability but also aligns them with the preferences of global stakeholders who increasingly value corporate sustainability.

Implications for Practice and Future Research

The evolving landscape of management accounting, as evidenced by the shifts toward strategic, technological, and sustainability-oriented practices, poses several implications for practice and future research. Practically, there is a clear indication that management accountants need to acquire new skills and competencies that align with these emerging areas. Educational and professional training curricula must adapt to include advanced IT skills, strategic management capabilities, and sustainability accounting practices. For future research, this

analysis suggests a continued need to explore how these emerging themes are integrated into the fabric of management accounting. Specifically, empirical research could focus on the outcomes of integrating advanced analytics and AI into management accounting systems, examining the impacts on organizational performance and strategic decision-making. Additionally, the role of management accounting in driving sustainability initiatives presents a fertile ground for research, particularly in exploring how these practices influence financial and non-financial outcomes.

5. CONCLUSION

This bibliometric study has underscored the evolving landscape of management accounting, highlighting the discipline's journey from a traditional focus on cost management and internal controls to embracing strategic decision-making, technological integration, and sustainability

practices. The analysis of keyword co-occurrences through VOSviewer has vividly illustrated how management accounting has broadened to incorporate significant elements such as big data, artificial intelligence, and sustainability, aligning itself with contemporary business challenges and stakeholder expectations. The integration of these modern elements not only enriches the strategic value of management accounting but also necessitates a transformation in the skill sets required by professionals in the field. As the discipline continues to evolve, it is imperative that both academic curricula and professional training programs adapt to equip future management accountants with the necessary tools to drive business innovation and sustainability. Future research should continue to explore these transformations, focusing on the impacts of technological and strategic advancements on the efficacy and scope of management accounting in a rapidly changing global business environment.

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