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SUSTAINABILITY ACCOUNTING IN SUPPLY CHAINS: A SYSTEMATIC REVIEW OF MANAGERIAL ACCOUNTING'S STRATEGIC ROLE

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Abstract

This study presents a systematic review of how managerial accounting has evolved into a strategic driver of sustainability within global supply chains. Traditionally focused on cost control, managerial accounting is increasingly aligned with environmental, social, and governance (ESG) imperatives, integrated reporting, and circular economy objectives. Through a hybrid methodology combining bibliometric mapping and systematic literature review, the study analyzes Scopus-indexed publications from 2018 to 2025, applying co-word analysis, thematic clustering, and co-citation mapping. The findings reveal a clear shift from transactional efficiency toward multi-capital value creation, as accounting systems integrate non-financial performance indicators, digital infrastructure, and stakeholder-centric governance models. Emerging technologies such as artificial intelligence, blockchain, and real-time analytics further enable this transition, embedding managerial accounting within dynamic ESG monitoring and sustainability governance frameworks. The literature also reflects a growing emphasis on resilience, adaptive capacity, and long-term performance alignment across global supply networks. By synthesizing these developments, the study repositions managerial accounting as a forward-looking infrastructure for sustainable supply chain strategy moving beyond its traditional role as a reporting function. A future research agenda is proposed to address remaining theoretical gaps and strengthen the integration of sustainability metrics, digital innovation, and managerial decision-making across interconnected supply ecosystems.

Keywords: Sustainability Accounting; ESG Integration; Circular Economy; Digital Accounting; Supply Chain Resilience; Integrated Reporting; Bibliometric Analysis.

1. INTRODUCTION

Managerial accounting within supply chains is undergoing a strategic transformation, driven by global sustainability imperatives, digital innovation, and evolving stakeholder expectations. Historically, discipline emphasized cost reduction and short-term financial control, often at the expense of broader strategic goals such as environmental accountability, stakeholder inclusivity, and long-term value creation (Alawattage & Wickramasinghe, 2024).

While traditional cost-centric models delivered operational efficiency, they proved insufficient in navigating the complexity, volatility, and transparency demands of modern global supply chains (Ivanov, 2020; Amirian et al., 2022). In response, managerial accounting is shifting toward integrated, multi-dimensional frameworks that align financial accountability with environmental, social, and governance (ESG) objectives.

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This transition reflects a growing recognition of the need to embed sustainability metrics, circular economy principles, and stakeholder performance indicators into accounting systems (Ascani et al., 2021; Jankalová & Jankal, 2024).

However, despite these advancements, academic research remains fragmented across accounting, supply chain management, digital systems, and organizational strategy domains. This fragmentation has impeded the development of cohesive frameworks capable of guiding both scholarly inquiry and practical implementation (Taschner & Charifzadeh, 2020). To address this gap, the present study conducts a hybrid systematic and bibliometric review of literature published between 2018 and 2025.

It traces the intellectual trajectory from transactional cost control toward ESG-integrated, digitally enabled, multi-capital frameworks. The review identifies major theoretical developments, emerging methodological patterns, conceptual limitations, and future research opportunities repositioning managerial accounting as a strategic enabler of sustainability performance and resilient value creation within supply chain networks.

2. THEORETICAL BACKGROUND AND LITERATURE REVIEW

To complement the bibliometric mapping with conceptual depth, this study undertakes a structured systematic review of high-impact literature published between 2018 and 2025, focusing on the intersection of managerial accounting, sustainability, and supply chain strategy. The selection of sources was guided by citation influence, thematic alignment, and representation across both established and emerging conceptual frameworks. This approach enables the tracing of how managerial accounting has evolved from traditional financial control mechanisms toward integrated frameworks that prioritize resilience, ESG performance, and digital governance. The intellectual foundations of managerial accounting within supply chain management (SCM) increasingly reflect broader shifts in global strategy, stakeholder accountability, and sustainability-led performance models.

2.1. Transaction Cost Economics and Its Limitations

Transaction Cost Economics (TCE) marked a significant theoretical development by emphasizing governance efficiency in supply chain relationships (Williamson, 1998). It offered useful insights into minimizing coordination costs through mechanisms such as outsourcing, vertical integration, and contractual safeguards. However, its control-oriented focus and risk-averse assumptions limit its relevance in today's sustainability-driven, digitally connected, and trust-based supply chain ecosystems (Sayem et al., 2018; Gao et al., 2018).

As firms increasingly collaborate across organizational boundaries to achieve ESG goals and transparency, TCE falls short in explaining the emergence of inter-organizational trust, shared sustainability performance, and integrated reporting frameworks. Contemporary supply chains demand accounting systems that support not only transaction efficiency but also co-created value, stakeholder legitimacy, and adaptive sustainability governance (Nygaard, 2022; Chauhan et al., 2022)

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2.2. Stakeholder Theory and the Triple Bottom Line

Stakeholder theory (Freeman, 1984) and the Triple Bottom Line (TBL) framework (Elkington, 1997) have significantly broadened the conceptual boundaries of managerial accounting by embedding environmental, social, and long-term sustainability considerations into performance evaluation. These frameworks reposition accounting systems from being solely instruments of internal financial control to platforms for capturing and reporting on carbon emissions, workforce diversity, and stakeholder engagement (Nartey & Van Der Poll, 2021).

In supply chain contexts, stakeholder legitimacy and multi-capital logic are increasingly embedded into decision-making processes, promoting transparency and accountability across interconnected networks. This evolution reflects a growing institutionalization of non-financial performance indicators and reinforces the role of managerial accounting in advancing ESG-aligned supply chain strategies (Gulluscio et al., 2020).

2.3. Institutional Theory and ESG Legitimacy

Institutional theory offers a complementary lens to stakeholder logic by explaining how firms adopt accounting practices in response to normative, coercive, and mimetic pressures within their institutional environments (DiMaggio & Powell, 1983). In the context of sustainability, ESG reporting mandates, voluntary certifications, and industry benchmarking schemes have compelled organizations to align internal accounting protocols with externally defined standards.

These practices serve both technical and symbolic functions ensuring regulatory compliance while also signaling legitimacy to investors, regulators, and civil society stakeholders (Wagenhofer, 2023). Given their central role in global value creation and risk exposure, supply chains are especially subject to these legitimacy pressures, prompting widespread adoption of ESG-integrated accounting systems across supplier networks and tiers (Jamalnia et al., 2022; Yang et al., 2024).

2.4. Integrated Reporting and Multi-Capital Value Creation

One of the most transformative developments in sustainability accounting has been the emergence of Integrated Reporting (IR) frameworks advanced by the International Integrated Reporting Council (IIRC, 2010). These frameworks promote a multi-capital approach encompassing financial, manufactured, intellectual, human, social, and natural capital that enables organizations to align strategic objectives with ESG performance across the value chain (Manninen et al., 2023).

In supply chain settings, this perspective translates into managerial accounting systems capable of capturing both upstream and downstream sustainability metrics, including Scope 3 carbon emissions, supplier diversity, labor practices, and ethical sourcing (Shekarian et al., 2022). Integrated Reporting thus positions accounting as a critical infrastructure for value creation, transparency, and long-term sustainability governance within globally networked supply chains (Navarrete-Oyarce et al., 2021).

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2.5 Addressing Theoretical Gaps and Research Opportunities

Despite the emergence of multiple frameworks, significant conceptual fragmentation persists in the literature. Existing theoretical paradigms whether economic, institutional, or stakeholder-oriented often remain confined to disciplinary silos and fail to reflect the dynamic, interconnected nature of modern supply networks (Fritz, 2022). There is still a lack of cohesive models that integrate managerial accounting tools with systems-level sustainability and resilience outcomes.

Static frameworks are ill-equipped to accommodate time-sensitive disruptions such as geopolitical shocks, digital transitions, or pandemics, which increasingly define global supply chain environments (Júnior et al., 2023). Moreover, while the adoption of digital technologies such as blockchain, AI, and real-time analytics is gaining traction, most managerial accounting theories remain underdeveloped in explaining how these tools reshape reporting structures, performance indicators, and strategic decision-making processes (Tiron-Tudor et al., 2022, Akter et al., 2024).

This digital disconnect limits the field's ability to respond to the demands of transparency, traceability, and adaptive governance in ESG-driven ecosystems. Sustainability itself remains insufficiently theorized in accounting discourse. Although ESG indicators are now more frequently incorporated into dashboards and disclosures, few models capture the complex interdependencies between financial, environmental, and social performance (Chopra et al., 2024).
Sustainability is often treated as a constraint rather than an endogenous source of value creation. Finally, behavioral and political dimensions are largely overlooked. Prevailing models tend to assume rational decision-making, disregarding the strategic power dynamics, information asymmetries, and stakeholder conflicts that shape accounting practices especially in multi-tier, cross-border supply chains (Fritz, 2022). Integrating behavioral economics and critical accounting perspectives could offer essential theoretical advancements to better understand managerial accounting's role in sustainability transitions (Jamalnia et al., 2022).

3. METHODOLOGY AND RESEARCH OBJECTIVES

This study adopts a rigorously structured, multi-method research design that integrates bibliometric analysis with a systematic literature review (SLR) to examine the intellectual evolution of managerial accounting within sustainability-oriented supply chain strategy. By combining the empirical breadth of bibliometric mapping with the conceptual depth of systematic synthesis, the research offers a comprehensive view of the field's structural development, thematic trajectories, and emerging knowledge clusters. The bibliometric phase analyzes Scopus-indexed literature from 2018 to 2025, mapping citation networks, influential authors, journal productivity, co-word relationships, and thematic clusters. Tools such as Biblioshiny (R/Bibliometrix) and VOSviewer were employed to visualize and interpret the intellectual structure of the field, particularly as it relates to ESG integration, digital transformation, and sustainability governance in managerial accounting.

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The subsequent systematic review synthesizes conceptual frameworks, empirical evidence, and methodological patterns from the most thematically central and frequently cited publications. Source selection followed strict inclusion criteria, ensuring alignment with relevance, recency, citation influence, and methodological diversity. This dual-stage approach enhances transparency and conceptual robustness, in line with best practices in management and accounting research (Bigus et al., 2023). The overarching goal is to systematically analyze how managerial accounting has transitioned from cost-centric traditions toward a strategic mechanism for sustainable value creation in global supply chains (N. H. N. Abdullah et al., 2022).

The study addresses the following research questions:

- RQ1: How has the intellectual structure of managerial accounting in supply chain strategy evolved between 2018 and 2025 in response to sustainability imperatives?
- RQ2: What are the dominant themes and conceptual trajectories that reflect the field's transition from cost control to integrated ESG-oriented value creation?
- RQ3: What research gaps remain underexplored in linking managerial accounting with digital technologies, resilience, and sustainability in supply chains?

To address these questions, the study pursues three interrelated objectives:

1. To map the intellectual structure and developmental trajectory of managerial accounting within supply chain strategy, highlighting key sources, authors, and thematic domains in sustainability discourse.
2. To critically evaluate the field's shift from traditional cost-based models toward ESG-aligned, multi-capital, and digitally enabled accounting frameworks.
3. To propose a conceptual foundation and future research agenda positioning managerial accounting as a strategic enabler of sustainable, transparent, and adaptive supply chain ecosystems.

While the study adheres to recognized standards for systematic and bibliometric reviews, several limitations are acknowledged. First, restricting the dataset to English-language publications may introduce language bias. Second, Scopus may underrepresent regional journals and grey literature. Third, citation lag may obscure recent high-impact contributions in co-citation and bibliographic coupling analyses.

Fourth, evolving ESG and sustainability terminologies may lead to keyword ambiguity and search imprecision. Lastly, elements of interpretive subjectivity are inherent in thematic synthesis and conceptual modeling. These limitations are recognized to support methodological transparency and guide future refinement.

Despite these constraints, the integrated approach adopted here provides a replicable and analytically rigorous framework for understanding how managerial accounting is being repositioned as a driver of sustainability performance and resilience in complex global supply chains (Ascani et al., 2021; Alawattage & Wickramasinghe, 2024).

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4. RESULTS

This section presents the results of the bibliometric analysis conducted to trace the intellectual development of managerial accounting within sustainability-oriented supply chain strategy between 2018 and 2025. Drawing on a curated dataset sourced from Scopus and supplemented by the Web of Science Core Collection, the analysis was performed using Biblioshiny (R/Bibliometrix), ensuring replicability, methodological rigor, and alignment with international bibliometric protocols. The annual publication trends reveal a clear upward trajectory, with a marked acceleration after 2020. This surge aligns with global supply chain disruptions triggered by the COVID-19 pandemic, which catalyzed academic interest in resilience-focused accounting, ESG-aligned cost management, and real-time performance analytics. Notably, the rise in scholarly output reflects not only increased volume but also a significant broadening of conceptual scope.

Over the review period, the field has transitioned from its roots in traditional cost accounting focused on budgetary control and variance analysis toward integrative frameworks that embed strategic agility, stakeholder accountability, and sustainability imperatives. These frameworks incorporate digital transformation capabilities and ESG metrics, fostering convergence across previously siloed domains such as managerial accounting, operations strategy, and environmental management. The findings affirm that managerial accounting is increasingly positioned as a strategic enabler of multi-capital value creation within globally distributed, data-driven, and sustainability-focused supply chain networks.

4.1. Author and Journal Productivity

The bibliometric analysis highlights the key journals and scholarly communities that have shaped the evolution of managerial accounting within sustainability-oriented supply chain strategy from 2018 to 2025. Among the most prolific sources, *Sustainability (Switzerland)* emerges as the dominant publication outlet, contributing 252 articles during the review period. This prominence reflects the journal's alignment with core themes in the field, including ESG integration, sustainability-driven performance systems, and multi-capital value creation (Ndanguza, 2025). Beyond *Sustainability*, the publishing landscape shows increasing diversification across journals situated at the intersection of environmental science, logistics, and interdisciplinary systems research. This diffusion signifies a paradigmatic shift away from conventional cost-accounting discourses toward integrative frameworks that foreground strategic resilience, digital governance, and sustainability analytics (Yun & Ülkü, 2023).

The emergence of sector-specific outlets particularly in energy and healthcare further illustrates the expanding relevance of managerial accounting in domains where real-time accountability, carbon tracking, and ESG disclosures are critical (Ascani et al., 2021). Research is no longer confined to traditional accounting and finance platforms but is increasingly published in venues that support holistic exploration of stakeholder engagement, non-financial performance, and climate-aligned reporting in global supply chains (Yun & Ülkü, 2023). As illustrated in **Figure 1**, this diversification signals a broader

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academic reorientation one that positions managerial accounting at the center of integrated performance systems and adaptive supply chain governance. The field is converging around sustainability imperatives, digital transparency, and inclusive stakeholder value as defining pillars of future research and practice.

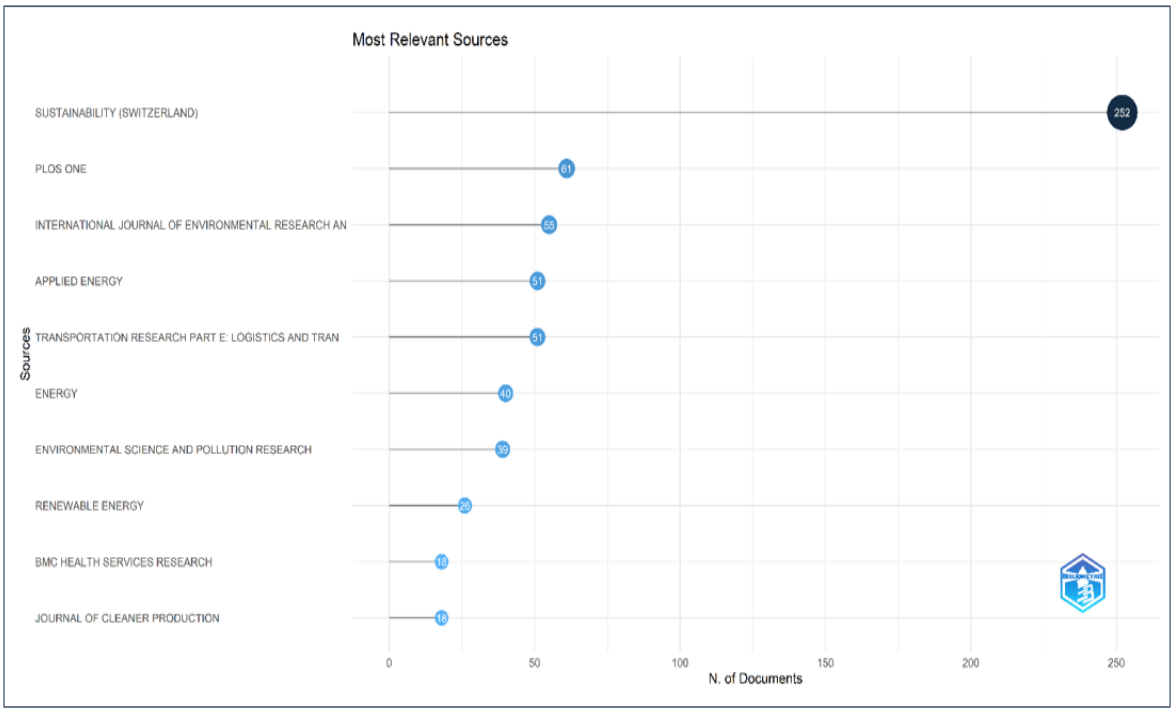

Figure 1: Most Relevant Sources in Managerial Accounting and Supply Chain Strategy Literature (2018–2025)

4.2. Core Journal Concentration and Longitudinal Growth

To assess the concentration and evolution of scholarly output, this study applies Bradford's Law to segment journals into three productivity zones core, related, and peripheral based on article frequency and rank distribution. The analysis reveals a clearly defined core of high-output journals that have shaped the discourse on managerial accounting within sustainability-oriented supply chain strategy from 2018 to 2025. *Sustainability (Switzerland)* emerges as the leading journal by a wide margin, reflecting its editorial alignment with ESG integration, circular economy metrics, and cross-functional performance governance. Other prominent journals within the central cluster include the *Journal of Cleaner Production*, *Renewable Energy*, and *Environmental Science and Pollution Research*. These outlets demonstrate a shared interdisciplinary orientation toward carbon accounting, digital reporting systems, and supply chain resilience

This core set of journals has not only concentrated conceptual development but also fueled the field's longitudinal growth. As illustrated in **Figures 2,** publication output has accelerated significantly since 2020, coinciding with global disruptions that heightened

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interest in sustainability-led value creation, real-time performance governance, and ESG compliance. This inflection point reflects a decisive scholarly shift away from cost-centric paradigms toward integrated frameworks that embed managerial accounting within broader supply chain transformation agendas. The sustained rise of interdisciplinary publishing venues particularly those in energy, logistics, and healthcare further validates the field's maturation. Managerial accounting research is no longer confined to traditional accounting and finance outlets but has expanded into platforms that support holistic approaches to stakeholder engagement, digital governance, and sustainability performance. This thematic convergence signals a new research trajectory, where accounting is redefined as a strategic enabler of adaptive, transparent, and ESG-aligned supply chain networks.

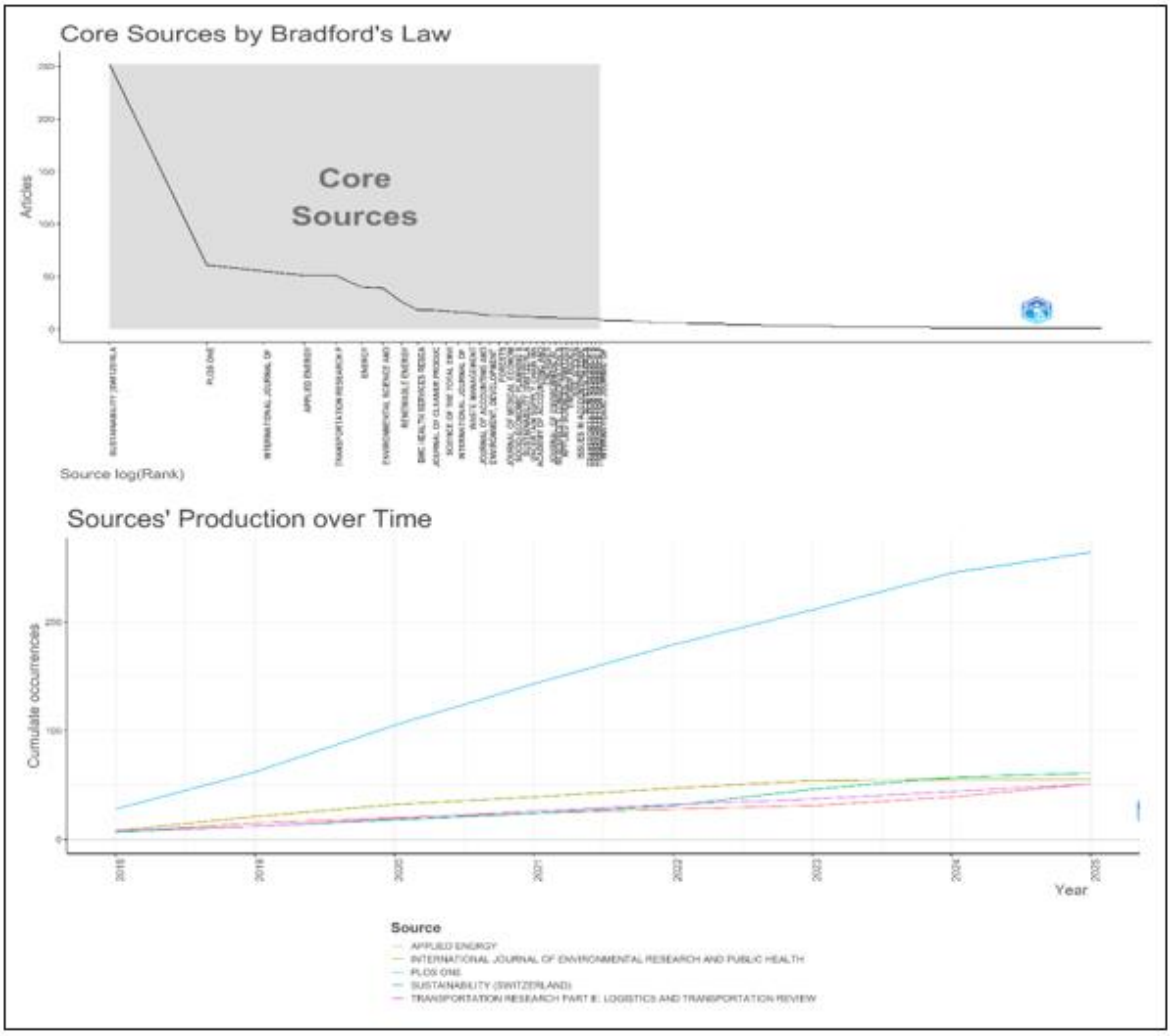

Figure 2: Journal Core and Growth Trends in Managerial Accounting and Supply Chain Strategy (2018–2025)

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4.3. Keyword Dynamics: Temporal Evolution of Research Focus

The temporal evolution of keywords provides critical insight into the field's longitudinal transformation. This diachronic lens reveals how scholarly priorities have shifted in response to disruptions, regulatory changes, and paradigm advancements in managerial accounting and supply chain strategy.

The dynamic analysis of keywords, visualized in **Figure 3,** traces a clear progression across three intellectual phases each marked by distinctive theoretical orientations and research priorities. **Table 1:** summarizes this

Table 1: Temporal Evolution of Managerial Accounting and Supply Chain Strategy (2018–2025)

Phase	Time Period	Dominant Keywords	Intellectual Tone
Phase I	2018–2019	Cost analysis, ABC, target costing, transaction cost economics, linear programming	Cost-efficiency focus rooted in traditional managerial control logic
Phase II	2020–2021	Performance metrics, KPIs, balanced scorecard, inter-organizational alignment, analytic hierarchy process	Expansion toward strategic alignment and integrated performance systems
Phase III	2022–2025	Sustainability, ESG, resilience, circular economy, AI, blockchain, environmental management accounting	Paradigm shift toward multi-capital value creation, digital accounting, and sustainability governance

As illustrated in **Figure 3.** cost-centric terminology dominated the earlier phase of research, particularly prior to 2020. These terms, including "cost analysis," "transaction costs," and "linear programming," reflect a narrow focus on operational efficiency and resource optimization.

However, this initial paradigm began to give way in Phase II, which saw the introduction of balanced scorecard frameworks and key performance indicators (KPIs), signifying the emergence of a broader managerial logic that emphasized inter-functional integration and strategic performance alignment (Johanson et al., 2019; Madsen, 2025).

The onset of Phase III marks a critical inflection point. Following the disruptions introduced by the COVID-19 pandemic, research emphasis shifted decisively toward sustainability, digitalization, and resilience (Dacre et al., 2024).

Keywords such as "carbon accounting," "environmental management accounting," "blockchain," and "artificial intelligence" surged in prominence, signaling the integration of real-time data systems and digital infrastructure into managerial accounting discourse.

This shift underscores the discipline's evolution from a reporting function into a strategic instrument for sustainability-led transformation across supply chain networks.

Of particular note is the rising frequency of terms like "resilience," "circular economy," and "green hydrogen" from 2022 onward.

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These reflect the field's growing sensitivity to environmental volatility, supply chain fragility, and the need for forward-looking, adaptive accounting systems that support long-term value generation and ESG compliance (Tingey-Holyoak et al., 2024). This keyword trajectory analysis validates the intellectual repositioning of managerial accounting as a strategic enabler of multi-capital value creation.

The field has evolved beyond its transactional origins, increasingly engaging with themes of sustainability, stakeholder inclusion, and technological innovation.

The convergence of these thematic streams signals a new research frontier: one where accounting functions are embedded within complex, responsive, and sustainability-driven supply chain ecosystems (Dacre et al., 2024).

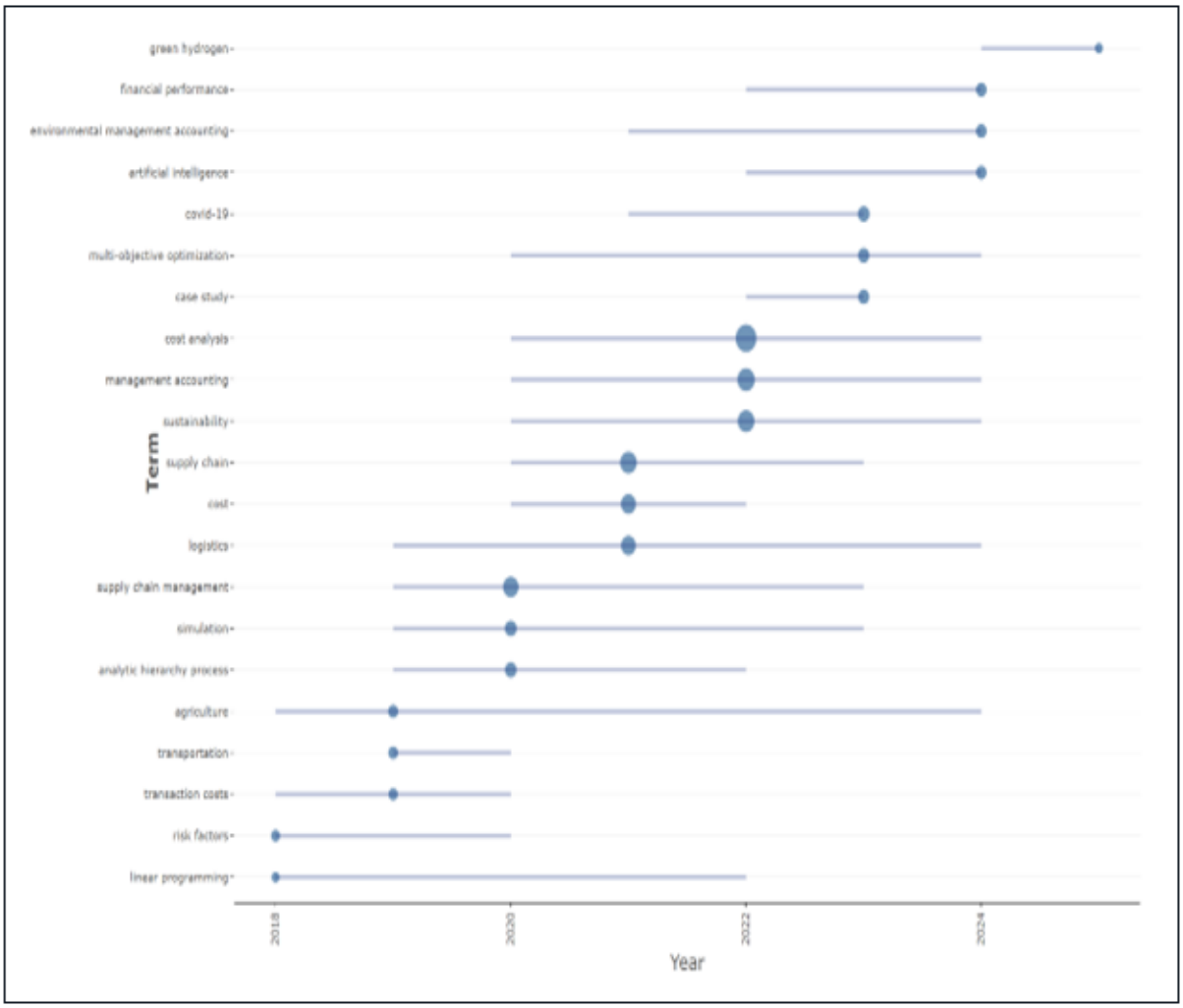

Figure 3: Temporal Trend Topics Visualization of Keywords in Managerial Accounting and Supply Chain Strategy (2018–2025)

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4.4. Author Networks and Global Research Dynamics

The analysis of author productivity and publication trends reveals the key contributors and evolving intellectual leadership driving managerial accounting research within sustainability-oriented supply chain strategy.

As visualized in **Figures 4,** the most prolific authors during the 2018–2025 period (30 documents), each affiliated with distinct institutions across the Asia-Pacific region. Their work has significantly shaped core research domains such as sustainability accounting, digital performance governance, and the development of multi-capital value creation frameworks.

This geographic concentration, particularly in China and Southeast Asia, aligns with broader trends in global supply chain leadership, ESG regulation uptake, and rapid digital infrastructure investment (Zhou et al., 2022; M. Zhang & Huang, 2024).

Importantly, no single author or institution dominates the field, indicating a healthy diversification of intellectual leadership and the emergence of collaborative research clusters.

The post-2020 period marks a notable expansion in author participation, coinciding with heightened scholarly attention to supply chain resilience, ESG transparency, and sustainability integration.

This surge reflects the growing interdisciplinarity of the field, with new contributors emerging from adjacent domains such as operations strategy, energy systems, environmental economics, and digital transformation.

These scholars increasingly draw on advanced analytics and integrated reporting models to reposition accounting as a mechanism for system-wide sustainability governance (Ascani et al., 2021; Jankalová & Jankal, 2024).

Furthermore, the decentralization of author networks evidenced by diverse institutional affiliations and cross-regional collaborations suggests a democratization of scholarly influence.

While traditional accounting research was often clustered within Western academic institutions, recent trends highlight a broader global participation, particularly from emerging economies (Uyar et al., 2020).

This shift opens new pathways for conceptual innovation, policy relevance, and interdisciplinary frameworks that bridge accounting, sustainability science, and digital governance.

Collectively, these trends reflect the maturation of managerial accounting as a dynamic, globally engaged, and methodologically adaptive discipline.

The evolving author landscape reinforces the field’s transition toward collaborative, ESG-aligned, and forward-looking models of accountability within complex supply chain ecosystems.

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Figure 4: Author Productivity and Temporal Dynamics in Managerial Accounting and Supply Chain Strategy (2018–2025)

4.5. Thematic Map and Strategic Positioning

To deepen the understanding of thematic maturity and intellectual integration in the field, a strategic mapping of co-word clusters was conducted using Callon's centrality–density framework. This technique allows for the classification of thematic structures based on their degree of development (density) and relevance to the broader research field

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(centrality). As visualized in **Figure 5**, four distinct quadrants emerged, each reflecting different roles in the evolving discourse on managerial accounting and supply chain strategy.

Clusters such as *performance measurement*, *management accounting*, *accounting*, *case study*, and *machine learning* occupy the upper-right quadrant, indicating themes that are both well-developed and central to the field.

These topics form the intellectual backbone of the discipline, representing the intersection of operational relevance and conceptual robustness. Their sustained influence suggests that managerial accounting has repositioned itself as a platform for integrated performance systems, particularly in the context of digital transformation and real-time decision-making (N. H. N. Abdullah et al., 2022).

Terms like *sustainability*, *supply chain*, *logistics*, *cost analysis*, *optimization*, and *economic evaluation* appear as highly central but less internally cohesive. These themes are foundational, widely referenced across research but require further theoretical refinement.

Their classification suggests active but evolving discourse particularly in areas where ESG metrics, resilience accounting, and sustainability-linked valuation models are being integrated into traditional cost frameworks (Shekarian et al., 2022).

Concepts such as *game theory*, *closed-loop supply chain*, and *Stackelberg game* show high internal development but limited centrality. These specialized themes may reflect technically sophisticated or sector-specific applications, especially relevant to reverse logistics, dynamic pricing, and sustainability modeling.

Although currently peripheral, these areas may rise in prominence as supply chains increasingly adopt circular economy principles and decentralized optimization strategies (Zhao et al., 2020; Shekarian & Flapper, 2021).

The term *costs and cost analysis* are positioned as marginal and underdeveloped. This thematic location suggests either a waning scholarly focus on classical cost control frameworks or their fragmentation across unrelated research contexts.

This aligns with the broader intellectual trajectory identified in this review, which shows a decisive shift away from transactional cost efficiency toward integrated value creation mechanisms. Taken together, the strategic thematic map affirms a paradigmatic realignment in managerial accounting.

The discipline is moving away from siloed, backward-looking cost structures toward multidimensional performance systems that integrate financial, environmental, technological, and stakeholder-driven metrics. The presence of highly central themes like *value creation* and *strategic management accounting* reinforces the transition to frameworks capable of aligning ESG reporting, digital intelligence, and multi-capital valuation with supply chain governance (N. H. N. Abdullah et al., 2022).

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Figure 5: Strategic Thematic Map of Managerial Accounting and Supply Chain Strategy (2018–2025)

4.6. Intellectual Lineage and Emerging Research Frontiers

To clarify the intellectual structure and future trajectories of managerial accounting within sustainability-oriented supply chain strategy, this study integrates co-citation and bibliographic coupling analyses. These complementary bibliometric techniques provide both retrospective and forward-looking perspectives on how the field has evolved and where it is heading. Co-citation analysis originally introduced by Small (1973) identifies

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frequently co-cited authors, documents, and journals, revealing the epistemological foundations that have historically shaped the discourse. As visualized in **Figure 6,** the dominant nodes in the co-citation network include seminal works in transaction cost economics (Williamson, 1998), institutional theory (DiMaggio & Powell, 1983), stakeholder theory (Freeman, 1984), and ESG-based performance logic ((Liu et al., 2023). These contributions reflect the field's deep theoretical entrenchment in both accounting and organizational studies, with enduring influence across sustainability accounting and supply chain governance.

In contrast, bibliographic coupling as defined by Kessler (1963) offers a prospective view by clustering recent publications that share common reference lists. This approach surfaces thematic convergence in real time, identifying dynamic research communities and intellectual frontiers. As shown in **Figure 6,** five major thematic clusters are identified in **Table 2**, each representing a distinct emerging frontier in managerial accounting.

Table 2: Active Research Frontiers Identified by Bibliographic Coupling Analysis (2018–2025)

Research Front	Emerging Topics
Integrated Reporting for Value Creation	Multi-capital disclosures, ESG-aligned value chains, stakeholder performance metrics
Digital Accounting for Supply Chains	AI-based forecasting, blockchain transparency, real-time performance control
Sustainability and Circular Accounting	Scope 3 emissions tracking, circular economy metrics, environmental performance
Resilience and Risk Metrics	Adaptive capacity, supply disruption models, risk-return tradeoff frameworks
Collaborative Value Networks	Inter-organizational trust, relational cost-sharing, joint value creation

These clusters reflect a paradigmatic shift from cost-centric frameworks to digitally integrated, stakeholder-responsive, and resilience-oriented accounting models (Zhang & Wang, 2025; Li & Wang, 2025).

The bibliographic coupling network shows high interconnectivity among publications, indicating a maturing field aligned with sustainability imperatives, real-time data systems, and multi-capital valuation logic.

To ensure analytical precision, the dataset was refined to exclude biomedical and clinical records unrelated to the study's conceptual domain.

Terms such as "female," "middle-aged," and "young adult," while statistically frequent, were removed to preserve thematic relevance.

Together, the co-citation and bibliographic coupling analyses demonstrate how foundational theories continue to inform the field, even as new interdisciplinary directions emerge. Managerial accounting is increasingly positioned at the nexus of environmental governance, digital innovation, and collaborative value creation within complex supply chain ecosystems.

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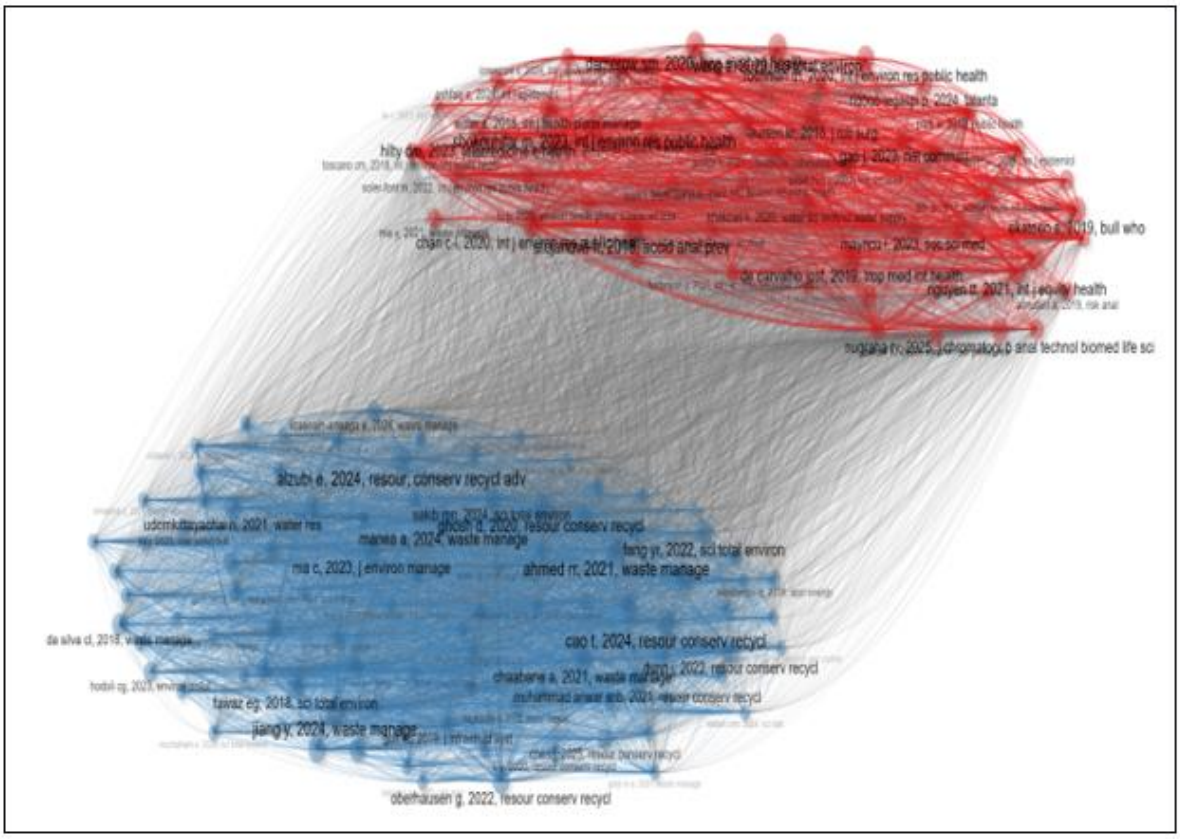

Figure 6: Bibliographic Coupling Network in Managerial Accounting and Supply Chain Strategy (2018–2025)

5. DISCUSSION

Building on the bibliometric insights presented earlier, this section presents findings from a structured systematic literature review that deepens the conceptual understanding of how managerial accounting is evolving in response to sustainability imperatives within supply chain strategy.

While the bibliometric analysis offered a macroscopic view of the field's intellectual structure, the systematic review provides a more granular synthesis of the theoretical frameworks, methodological trends, and empirical contributions driving this transformation. The review draws on a curated subset of highly cited, thematically central, and methodologically diverse studies, selected through co-word mapping, thematic clustering, and citation impact metrics.

By focusing on research situated at the intersection of financial control, operational efficiency, environmental accountability, and digital innovation, the synthesis reveals how managerial accounting is increasingly positioned as a strategic infrastructure for ESG alignment, multi-capital performance management, and adaptive value creation in complex supply chain systems.

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5.1. Theoretical Foundations

The systematic literature review reveals a gradual but decisive shift in how managerial accounting is theorized within supply chain strategy. Moving beyond transactional efficiency and internal cost control, the field has progressively embraced a more integrated constellation of frameworks that reflect the increasing complexity, interdependence, and strategic significance of global supply networks. In its early conceptual phase, the literature was anchored in Transaction Cost Economics (TCE) (Coase, 1937; Williamson, 1975), which positioned managerial accounting as a tool for minimizing inter-firm coordination costs through governance structures, outsourcing decisions, and contract-based safeguards. However, as supply chains expanded into dynamic, multi-tiered ecosystems, theoretical focus shifted toward the Resource-Based View (RBV) (Barney, 1991) and Dynamic Capabilities Theory (Teece, Pisano, & Shuen, 1997). These perspectives redefined accounting as a strategic asset that enables organizations to mobilize data, foster cross-functional learning, and respond to environmental volatility.

The incorporation of Stakeholder Theory (Freeman, 1984) and the Triple Bottom Line (TBL) (Elkington, 1997) marked a critical inflection point, extending managerial accounting to encompass environmental, social, and governance (ESG) performance. Tools such as the Balanced Scorecard and Strategy Maps (Kaplan & Norton, 1992, 1996) facilitated the operationalization of multi-capital frameworks by integrating financial, operational, innovation, and sustainability dimensions into performance management. At the institutional level, Institutional Theory (Meyer & Rowan, 1977; DiMaggio & Powell, 1983) has been widely employed to explain the diffusion of sustainability-oriented accounting practices, such as integrated reporting, carbon accounting, and ESG disclosure. These practices are shaped not only by efficiency concerns but also by regulatory expectations, normative pressures, and legitimacy-seeking behaviour across organizational fields (Mahmood & Uddin, 2020).

More recently, the literature has drawn on Network Theory and the Relational View (Dyer & Singh, 1998), which reconceptualize managerial accounting as a relational capability embedded within inter-organizational ecosystems. Practices such as open-book accounting, shared forecasting, joint performance metrics, and collaborative risk-sharing reflect a shift from firm-centric control to network-enabled value co-creation and transparency across supply chains (Uddin et al., 2020). Together, these theoretical foundations illustrate the field's intellectual evolution from closed-system financial control to a system-wide, sustainability-aligned platform for strategic coordination. Managerial accounting is increasingly positioned as an infrastructure for ESG integration, resilience planning, and digital transformation supporting long-term value creation across complex and interconnected global supply chains (Alawattage & Wickramasinghe, 2024).

This conceptual progression is visually synthesized in **Figure 7,** which presents an integrated timeline of the theoretical and practical evolution of managerial accounting in

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supply chain strategy. The diagram illustrates how the field has moved from transaction-cost-centered paradigms toward stakeholder- and technology-driven frameworks that support ESG integration, digital intelligence, and multi-capital value creation. Each phase reflects distinct theoretical anchors and accounting practices aligned with shifting strategic priorities and sustainability imperatives.

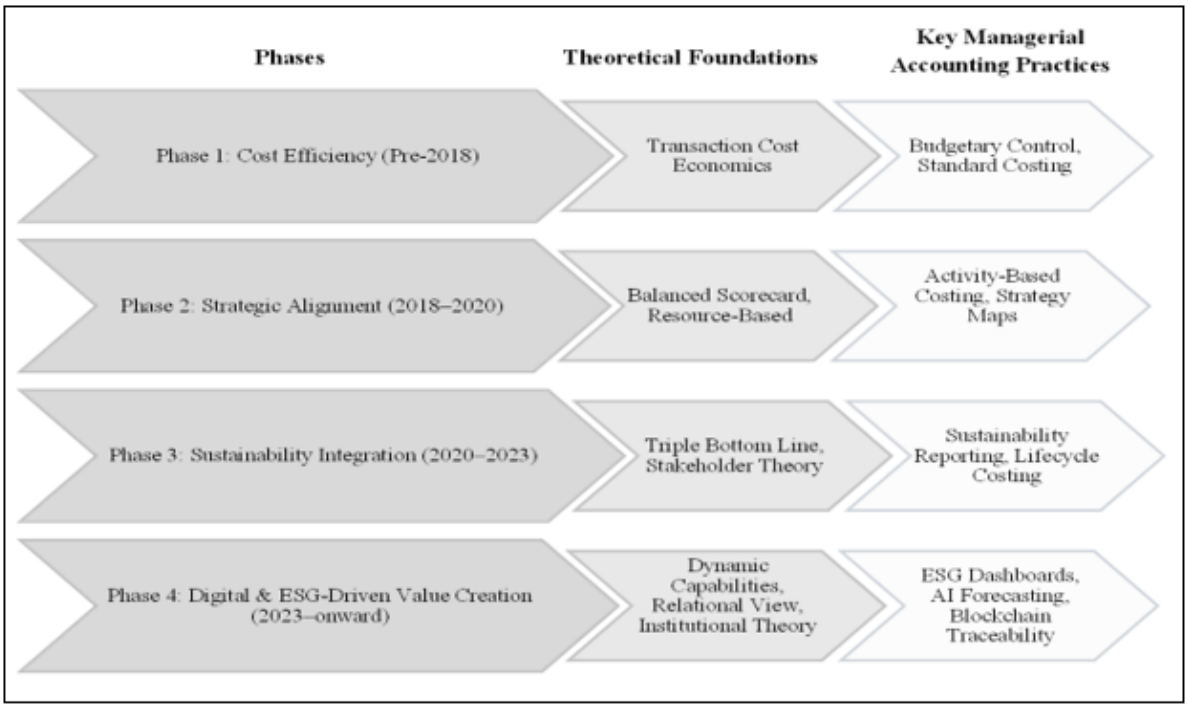

Figure 7: Evolution of Managerial Accounting in Supply Chain Strategy: From Cost Efficiency to ESG-Driven Value Creation

5.2. Sustainability Reporting and Integrated Value Measurement

A central outcome of the systematic review is the evolving role of managerial accounting in supporting integrated sustainability reporting and multi-capital performance measurement. Empirical studies increasingly highlight the adoption of frameworks that enable holistic disclosure of both financial and non-financial indicators, grounded in stakeholder theory and the triple bottom line (Elkington, 1997).

These frameworks align traditional cost-based metrics with environmental and social performance dimensions, embedding ESG priorities into accounting systems and strategic governance. Within this context, managerial accounting is no longer limited to performance tracking; it functions as both a decision-making infrastructure and a narrative mechanism through which organizations communicate their sustainability commitments and societal impact.

Integrated reporting frameworks, such as those developed by the IIRC, have facilitated the translation of ESG metrics into coherent, stakeholder-oriented disclosures that

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support transparency, accountability, and long-term value creation (Alawattage & Wickramasinghe, 2024).

Moreover, digital transformation has emerged as a critical enabler of this sustainability integration. Technologies such as artificial intelligence (AI), blockchain, the Internet of Things (IoT), and real-time analytics have redefined how organizations forecast costs, monitor environmental impacts, and measure adaptive performance (Feroz et al., 2021). These technologies support the transition from static, backward-looking control systems to dynamic, data-driven architectures that enable strategic agility, predictive planning, and resilience across supply chains. Together, the integration of ESG metrics and digital intelligence signals a fundamental reconfiguration of managerial accounting (M. Zhang & Huang, 2024). The discipline now functions as a forward-looking platform that supports multi-stakeholder value creation, enhances supply chain transparency, and reinforces the strategic alignment of sustainability and performance management. This shift reflects the complexity of global supply networks and the rising imperative for accounting systems to respond to environmental, social, and technological challenges with precision, adaptability, and impact (Jankalová & Jankal, 2024).

6. RESEARCH GAPS AND FUTURE DIRECTIONS

The combined bibliometric and systematic review reveals critical research gaps that constrain the integration of managerial accounting into sustainability-oriented supply chain strategy. Despite recent theoretical expansion, the literature remains fragmented across disciplinary boundaries most notably between accounting, operations management, sustainability studies, and strategic governance (Taschner & Charifzadeh, 2020). This fragmentation hampers the development of cohesive frameworks for measuring and managing value creation in complex, multi-capital supply chains. A primary theoretical gap lies in the limited integration of environmental, social, and governance (ESG) imperatives with traditional managerial accounting systems. While ESG themes are increasingly discussed, few studies have fully embedded metrics such as carbon accounting, social impact indicators, or integrated reporting into managerial control architectures. Future research should examine how these tools influence strategic decision-making, long-term performance alignment, and equitable value distribution across supply networks (Manninen et al., 2023).

Empirical generalizability also remains limited. Many studies are context-specific, with little attention to cross-regional, cross-sectoral, or institutional diversity. Comparative research is needed to explore how regulatory environments, stakeholder norms, and policy mandates shape accounting practices across both developed and emerging economies (Ross et al., 2019). A third critical gap involves the scarcity of longitudinal and process-based research that captures the dynamic evolution of managerial accounting in sustainability transitions. Most studies offer static snapshots, failing to account for how accounting tools adapt over time in response to disruptions, resilience-building initiatives, or stakeholder reconfiguration (Giannetti et al., 2021). Future research should explore how ESG metrics evolve alongside risk governance, adaptive capacity, and digital

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transformation. Additionally, the literature tends to over-rely on quantitative proxies, often overlooking the behavioral, institutional, and political economy dimensions of accounting in practice. Greater use of qualitative and mixed-method approaches such as ethnographies, case studies, and participatory fieldwork can illuminate how accounting systems are shaped by power dynamics, human agency, and organizational context (De Villiers et al., 2019).

Finally, a forward-looking research agenda must emphasize interdisciplinary collaboration. Integrating insights from accounting, supply chain management, sustainability science, and digital systems can foster the development of robust, scalable frameworks. These should support multi-capital performance, real-time decision-making, and inclusive stakeholder engagement ultimately enabling accounting to function as a strategic enabler of resilient, transparent, and sustainable global value networks (Dacre et al., 2024).

7. CONCLUSION

This study offers a comprehensive and forward-looking synthesis of how managerial accounting is evolving within global supply chain strategy in response to sustainability imperatives. Employing a hybrid bibliometric–systematic methodology, the research maps intellectual developments, thematic shifts, and emerging research frontiers between 2018 and 2025. The findings demonstrate a clear transition from cost-centric paradigms to integrated frameworks that embed financial accountability, ESG alignment, stakeholder inclusivity, and digital governance into managerial accounting systems (Taschner & Charifzadeh, 2020; N. H. N. Abdullah et al., 2022). Theoretically, the study contributes to the re-conceptualization of managerial accounting as a dynamic, multi-capital capability embedded in globally distributed value chains. Accounting systems are increasingly viewed not as retrospective reporting mechanisms but as forward-looking infrastructures for coordinating performance, managing uncertainty, and advancing cross-functional sustainability goals (N. H. N. Abdullah et al., 2022).

Practically, the review provides actionable insights for supply chain strategists, financial controllers, and ESG leaders. These include the institutionalization of integrated dashboards that align financial and non-financial metrics; the adoption of cost-sharing mechanisms across organizational boundaries; and the deployment of predictive, real-time analytics for sustainability forecasting. (Shekarian et al., 2022; Kumar et al., 2023). Embedding ESG indicators into core accounting workflows positions firms to enhance transparency, strengthen stakeholder legitimacy, and improve supply chain resilience. Nonetheless, this study acknowledges several limitations (Chopra et al., 2024). The analysis is confined to English-language, Scopus-indexed publications, excluding potentially valuable regional and grey literature. Future research should address these limitations to improve inclusivity and global applicability. Moreover, as supply chains continue to confront geopolitical volatility, regulatory shifts, and climate-linked disruptions, managerial accounting must adapt in parallel moving decisively beyond compliance and efficiency logics. In doing so, scholars and practitioners alike can

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reposition managerial accounting as a strategic enabler of sustainable value creation. This evolution calls for frameworks that integrate environmental, social, and technological performance transforming accounting into a critical infrastructure for governing resilient, transparent, and ethically aligned global supply chain ecosystems.

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