Cross-Border Supplier Relationship Management Frameworks for Pharmaceutical and Global Construction Sectors

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Abstract
Globalization has intensified the interdependence of supply chains across borders, making supplier relationship management (SRM) a critical competency for industries operating in highly regulated and dynamic environments. Among these, the pharmaceutical and global construction sectors stand out due to their complex supply bases, stringent regulatory frameworks, and exposure to geopolitical and logistical uncertainties. Cross-border supplier relationship management (CBSRM) frameworks are essential in navigating these complexities, enabling firms to balance compliance, risk management, cost efficiency, and innovation. This paper provides a comprehensive, literature-based analysis of CBSRM frameworks developed up to 2024, with a specific focus on the pharmaceutical and construction industries. Drawing on diverse theoretical perspectives and empirical evidence, the paper traces the evolution of SRM from transactional to strategic models, highlights methodological advancements, and examines the integration of digital technologies, sustainability imperatives, and risk mitigation strategies. The analysis demonstrates that while both sectors share common challenges as reliance on global suppliers, vulnerability to disruptions, and pressure for cost-effectiveness pharmaceutical industry emphasizes regulatory compliance, quality assurance, and intellectual property protection, whereas the construction industry focuses on project-based collaboration, logistics, and cost-risk optimization. By synthesizing these insights, the study identifies opportunities for developing integrative frameworks that combine risk-resilient, technology-enabled, and sustainability-oriented approaches. This review contributes to advancing both academic debates and managerial practices, offering a roadmap for designing robust CBSRM frameworks capable of addressing the evolving demands of cross-border supply chain management in critical industries.

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1. Introduction

The increasing globalization of trade and production has transformed supply chains into highly interdependent and geographically dispersed systems.[1, 2, 3, 4]. In this landscape, managing supplier relationships across borders has become both an opportunity and a challenge for industries that rely heavily on international sourcing and collaborative partnerships. Supplier Relationship Management (SRM) has long been recognized as a critical capability for ensuring cost efficiency, innovation, and competitive advantage.[5, 6]. However, the cross-border dimension introduces additional layers of complexity, including cultural diversity, regulatory compliance, geopolitical risks, logistical uncertainties, and technological integration

challenges.[7, 8]. Developing robust cross-border supplier relationship management (CBSRM) frameworks is therefore essential for industries that operate on a global scale, particularly those in the pharmaceutical and construction sectors.[9, 10].

The pharmaceutical industry exemplifies the necessity of CBSRM due to its reliance on global supply chains for raw materials, active pharmaceutical ingredients (APIs), packaging components, and distribution networks.[11, 12]. The industry's heavy dependence on suppliers from multiple jurisdictions spanning regions with divergent regulatory regimes makes cross-border collaboration indispensable yet precarious. Supply disruptions caused by trade restrictions, pandemics, or political instability can have life-threatening consequences, not only for firms but also for public health.[13, 14]. Moreover, stringent regulatory requirements from agencies such as the U.S. Food and Drug Administration (FDA) and the European Medicines Agency (EMA) impose strict obligations on quality, safety, and traceability.[15, 16]. In this context, CBSRM frameworks must integrate compliance monitoring, risk management, and technological capabilities to ensure uninterrupted supply and safeguard patient outcomes.

The global construction sector, though operating under different industrial logics, also depends extensively on cross-border supplier networks. Major construction projects frequently source materials, equipment, and expertise from multiple countries, making them highly susceptible to supply chain risks and cost escalations [17, 18]. The industry is characterized by project-based relationships, where supplier interactions are often temporary but strategically significant.[19]. In this setting, CBSRM frameworks must address challenges such as contractual complexities, cultural diversity, fluctuating demand, and logistical coordination across borders. With the rise of mega-infrastructure projects, especially in developing regions, the capacity to manage cross-border supplier relationships effectively has become critical for ensuring project success, controlling costs, and mitigating delays.[20, 21].

Both the pharmaceutical and construction sectors have faced unprecedented stress in recent years, underscoring the need for stronger CBSRM frameworks. The COVID-19 pandemic, for instance, exposed vulnerabilities in global supply chains, leading to severe shortages of APIs, medical supplies, and construction materials.[22, 23]. Similarly, geopolitical disruptions such as Brexit, trade wars, and regional conflicts have disrupted cross-border supply flows, challenging firms to adapt their supplier management strategies [24]. These events highlight that CBSRM is not merely a procurement concern but a strategic imperative that directly impacts organizational resilience, competitiveness, and societal well-being. Developing comprehensive frameworks that integrate risk management, digital technologies, and sustainability has therefore become a priority in academic and practitioner debates.[25].

The theoretical foundations of CBSRM are rooted in multiple disciplines, including supply chain management, international business, and strategic management. Resource dependence theory emphasizes the importance of managing interdependencies with critical suppliers to reduce uncertainty and secure access to resources.[26]. Transaction cost economics highlights the role of contractual governance in cross-border supplier relationships, where asset specificity and opportunism risks are magnified by geographical and cultural distance.[27]. Relational contracting and network theories underscore the importance of trust, collaboration, and information sharing in sustaining long-term cross-border partnerships.[28]. More recently, institutional theory has been applied to explain how regulatory and cultural contexts shape CBSRM practices.[29]. These perspectives provide valuable insights into the unique challenges and dynamics of managing suppliers across borders.

Methodologically, research on CBSRM has progressed from descriptive studies to more sophisticated models incorporating multi-criteria decision-making, performance measurement frameworks, and digital technologies. Early frameworks largely focused on cost, quality, and delivery as primary criteria.[30]. However, as supply chains became more global and exposed to risks, evaluation frameworks expanded to include resilience, compliance, sustainability, and innovation.[31]. By 2024, the integration of advanced technologies such as blockchain, artificial intelligence (AI), and the Internet of Things (IoT) will have transformed the possibilities for managing cross-border supplier relationships.[32]. These technologies enhance transparency, traceability, and predictive capabilities, enabling firms to mitigate risks and strengthen collaboration with global suppliers.[33].

Despite these advancements, CBSRM remains fraught with challenges. For the pharmaceutical industry, regulatory heterogeneity across jurisdictions complicates compliance monitoring and increases the risk of supply disruptions [34]. Dependence on offshore suppliers for APIs, particularly from China and India, creates vulnerabilities that are difficult to mitigate without collaborative frameworks. Intellectual property protection and data security further complicate cross-border collaborations [35]. In construction, project-specific dynamics such as contractual disputes, payment risks, and coordination failures frequently undermine supplier relationships [36]. Cultural differences and communication barriers also impede effective collaboration, particularly in large-scale projects involving diverse stakeholders from multiple countries [37]. Addressing these challenges requires frameworks that are not only comprehensive but also adaptable to dynamic environments and industry-specific conditions.

The convergence of sustainability imperatives adds another dimension to CBSRM. Both pharmaceuticals and construction are under increasing pressure to reduce environmental impact, promote ethical sourcing, and ensure social responsibility across their supply chains.[38]. Pharmaceutical firms must ensure that their suppliers adhere to environmental standards in the production of APIs, while construction companies face scrutiny over the sourcing of raw materials, carbon emissions, and labor practices.[39]. CBSRM frameworks must therefore incorporate sustainability as a central criterion, aligning supplier performance with global standards such as the United Nations Sustainable Development Goals (SDGs). This integration reflects a broader shift in supply chain management, where sustainability and resilience are increasingly viewed as inseparable from competitiveness and long-term value creation.[40].

Another emerging theme in CBSRM research is the role of digital technologies in transforming cross-border supplier management. Blockchain technology, for instance, offers unprecedented opportunities for enhancing transparency and traceability, particularly in industries like pharmaceuticals,

where authenticity and safety are paramount.[41]. In construction, digital platforms and building information modeling (BIM) facilitate collaboration and coordination among global suppliers and contractors. Artificial intelligence enables predictive analytics for supplier risk assessment, while IoT provides real-time monitoring of materials and logistics.[42, 43]. The integration of these technologies into CBSRM frameworks represents a significant advancement, though challenges related to interoperability, cost, and adoption remain.[44, 45].

To summarize, the introduction of this study establishes the critical importance of CBSRM in the pharmaceutical and global construction sectors. These industries exemplify both the opportunities and challenges of cross-border supplier management, given their reliance on global networks, exposure to regulatory and logistical complexities, and increasing pressure for sustainability and resilience. The review highlights the evolution of theoretical perspectives, methodological advancements, and technological innovations that have shaped CBSRM up to 2024. However, persistent challenges including regulatory heterogeneity, cultural diversity, sustainability integration, and technological adoption underscore the need for comprehensive and adaptable frameworks. Against this backdrop, the present study aims to consolidate existing knowledge through a systematic literature review, focusing on frameworks that address the unique dynamics of cross-border supplier relationships in the pharmaceutical and construction sectors.

The remainder of the paper is structured as follows. Section 2 provides a comprehensive literature review, tracing the evolution of CBSRM frameworks across industries and highlighting key methodological and conceptual contributions. Section 3 discusses the implications of these findings for the pharmaceutical and construction sectors, while Section 4 concludes with recommendations for future research and practice.

2. Literature Review

Research on supplier relationship management (SRM) has evolved substantially over the past decades, particularly as firms increasingly source materials, components, and services across international borders. Cross-border supplier relationship management (CBSRM) frameworks attempt to capture the distinctive complexities of managing global supply bases, including regulatory heterogeneity, logistical challenges, cultural diversity, and geopolitical risks. This section synthesizes the evolution of CBSRM literature, with particular focus on the pharmaceutical and construction sectors, which represent industries where the stakes of supplier relationships are especially high.

2.1. Evolution of Supplier Relationship Management Research

The origins of SRM can be traced to the purchasing literature of the 1960s and 1970s, when supplier evaluation was primarily based on cost, quality, and delivery [46, 47]. Over time, scholars recognized that such narrow criteria were inadequate to capture the strategic role of suppliers in innovation, risk management, and long-term competitiveness. Early frameworks were heavily transactional, treating suppliers as interchangeable entities to be evaluated largely on price competitiveness. By the 1980s and 1990s, relational perspectives began to emerge, influenced by theories of strategic alliances and inter-firm networks.[48]. Researchers argued that supplier relationships could become sources of competitive advantage if managed strategically.[49].

The rise of globalization in the 1990s and 2000s accelerated the internationalization of supply chains, making cross-border supplier management an unavoidable reality for firms in virtually all industries.[50, 51]. Scholars emphasized that managing suppliers across borders requires more than traditional procurement practices, since issues such as regulatory compliance, cultural barriers, currency risks, and political instability become critical. This shift coincided with the development of theoretical perspectives such as resource dependence theory, which highlights the importance of managing interdependencies with critical suppliers, and transaction cost economics, which emphasizes the role of governance mechanisms in reducing opportunism in cross-border relationships.[52]. Relational contracting theories further emphasized trust and collaboration as essential components of international supplier relationships.[53, 54].

By the 2010s, supplier management literature increasingly reflected concerns over sustainability, resilience, and digital transformation [55, 56]. These trends were amplified by global disruptions such as financial crises, natural disasters, and, more recently, the COVID-19 pandemic, which exposed vulnerabilities in global supply chains.[57, 58]. The pharmaceutical and construction industries, due to their reliance on complex cross-border networks, became focal points of these debates.

2.2. Supplier Relationship Management in the Pharmaceutical Industry

Pharmaceutical supply chains are among the most highly regulated and globally dispersed in the world. Firms often depend on active pharmaceutical ingredients (APIs) sourced from manufacturers in India, China, and other emerging economies, while distribution networks span multiple continents [59, 60]. Literature highlights that this global dispersion increases efficiency but also exposes the industry to supply risks, regulatory fragmentation, and quality control challenges. For instance, dependence on offshore suppliers for critical APIs has been identified as a vulnerability, with shortages during the COVID-19 pandemic underscoring the fragility of global pharmaceutical supply chains [61, 62].

Studies emphasize that CBSRM in the pharmaceutical sector requires integration of compliance and quality assurance mechanisms into supplier management frameworks.[63, 64]. Regulatory authorities such as the FDA and EMA impose strict requirements for documentation, traceability, and testing, making supplier compliance non-negotiable [65, 66]. Consequently, relationship management frameworks in this industry often prioritize supplier audits, certification programs, and collaborative compliance initiatives. Beyond regulatory concerns, intellectual property (IP) protection has emerged as another crucial dimension, as cross-border collaborations increase the risk of IP leakage and counterfeiting.[62, 67].

Relational aspects of CBSRM are also significant in pharmaceuticals. Trust, transparency, and information sharing are essential for ensuring compliance and minimizing risks of product recalls or safety breaches. Several studies have emphasized the role of collaborative partnerships, where pharmaceutical firms invest in supplier development and joint problem-solving to strengthen long-term

reliability.[68]. However, literature also warns that power asymmetries often characterize pharmaceutical supply chains, with large multinational companies exerting disproportionate influence over smaller suppliers.[69]. These dynamics raise concerns about equity and sustainability in cross-border supplier relationships.

More recently, digital technologies have been explored as enablers of CBSRM in pharmaceuticals. Blockchain has been proposed for enhancing the traceability of APIs and preventing counterfeit drugs from entering supply chains.[70, 71]. Artificial intelligence is being deployed for predictive analytics in supplier risk assessment, while IoT technologies enable real-time monitoring of temperature-sensitive shipments.[72, 73]. These innovations point to a future where CBSRM frameworks in pharmaceuticals are increasingly data-driven, enabling continuous monitoring and predictive decision-making.[74].

2.3. Supplier Relationship Management in the Construction Industry

The global construction sector presents a very different set of supplier relationship dynamics, but one that is equally dependent on cross-border networks. Large construction projects often source raw materials such as steel, cement, and timber from international markets, while also relying on global equipment suppliers and specialized subcontractors.[75, 76]. The project-based nature of construction makes supplier relationships temporary, but their importance is heightened by the fact that delays or failures in supply can derail entire projects.[77, 78].

Literature emphasizes that CBSRM frameworks in construction must address contractual complexities, cultural diversity, and logistical challenges. Contractual governance is particularly significant, as disputes over payment, quality, and delivery timelines are common in cross-border construction projects [79]. Several studies highlight that legal heterogeneity across jurisdictions complicates contract enforcement, making relational governance and trust equally important [80]. Moreover, cross-border projects often involve diverse cultural contexts, and scholars note that cultural differences in communication, negotiation, and decision-making can hinder effective collaboration [81].

Supply chain risks are a recurring theme in construction CBSRM research. Fluctuations in global commodity prices, shipping disruptions, and geopolitical events frequently cause cost overruns and delays. As a result, supplier management frameworks emphasize risk-sharing mechanisms, contingency planning, and collaborative logistics management.[82, 83, 84]. More recently, sustainability concerns have entered the construction CBSRM discourse, with increasing attention to the environmental impact of sourcing raw materials and ensuring ethical labor practices in global supply chains.[85, 86].

Digitalization is also reshaping CBSRM in the construction sector. Building Information Modeling (BIM) platforms enable better coordination among suppliers, contractors, and project managers across borders.[87, 88]. Digital supply chain platforms enhance visibility and facilitate real-time communication, reducing risks of misalignment. Scholars also emphasize the role of data analytics in supplier selection and performance evaluation, enabling firms to integrate cost, quality, risk, and sustainability considerations into decision-making.[89, 90]. These developments mirror trends in pharmaceuticals, where digital transformation is increasingly central to CBSRM.

2.4. Comparative Insights: Pharmaceuticals vs. Construction

While both the pharmaceutical and construction industries rely heavily on cross-border suppliers, the literature reveals important differences in their CBSRM priorities. Pharmaceuticals emphasize regulatory compliance, quality assurance, and intellectual property protection, given the high stakes of product safety and patient outcomes.[91]. Construction, by contrast, emphasizes cost management, contractual governance, and logistical coordination, reflecting its project-based and cost-sensitive nature.[92, 119].

Despite these differences, common themes emerge. Both industries face growing pressure to integrate sustainability into CBSRM frameworks, whether through environmentally responsible sourcing in construction or sustainable manufacturing practices in pharmaceuticals. Both sectors are also exploring digital technologies such as blockchain, AI, and IoT to enhance transparency, traceability, and predictive capabilities.[93]. Moreover, both industries recognize that resilience and risk management must be central to cross-border supplier relationships in an era of increasing global disruptions.[94].

2.5. Theoretical Contributions and Gaps

The literature on CBSRM draws upon diverse theoretical foundations. Transaction cost economics remains influential, explaining the importance of governance mechanisms in reducing opportunism in cross-border contexts. Resource dependence theory highlights the strategic importance of securing reliable access to critical inputs, particularly in industries like pharmaceuticals, where substitutes are limited. Relational contracting theory underscores the role of trust, collaboration, and social capital in sustaining cross-border partnerships. Institutional theory offers insights into how regulatory, cultural, and normative environments shape supplier relationship practices.

Despite these contributions, several gaps persist. First, much of the literature remains industry-specific, with limited attempts to develop integrative CBSRM frameworks that can be adapted across sectors. Second, while digital technologies are frequently discussed, empirical evidence of their large-scale implementation remains scarce, particularly in developing regions.[95, 96]. Third, sustainability integration in CBSRM frameworks remains fragmented, with little consensus on how to operationalize and measure sustainability performance across global suppliers. Finally, there is a need for greater attention to the human and behavioral dimensions of CBSRM, including how cultural diversity, power asymmetries, and trust dynamics influence outcomes.[97, 98].

2.6. Synthesis of Trends up to 2024

Synthesizing the literature reveals several key trends. First, CBSRM has evolved from transactional cost-based models to strategic, multi-dimensional frameworks that integrate risk, sustainability, and innovation. Second, both pharmaceuticals and construction demonstrate increasing reliance on digital technologies to enhance transparency and predictive capabilities. Third, sustainability has shifted from a peripheral concern to a central criterion in CBSRM frameworks, reflecting broader societal and regulatory pressures. Fourth, resilience has emerged as a defining

priority, driven by global disruptions ranging from pandemics to geopolitical conflicts.

In conclusion, the literature up to 2024 demonstrates that while CBSRM remains an evolving field, its significance in industries such as pharmaceuticals and construction cannot be overstated. The frameworks developed reflect a convergence of theoretical insights, technological innovations, and practical imperatives, but also highlight enduring challenges in implementation, sustainability integration, and cross-sectoral generalization. These insights provide the foundation for discussing the practical and strategic implications of CBSRM in the subsequent sections of this paper.

3. Discussion and Implications

The literature on cross-border supplier relationship management (CBSRM) frameworks highlights both the progress made in developing structured approaches and the persistent challenges that continue to constrain their implementation. For the pharmaceutical and construction sectors, the implications of this body of work are profound, since both industries rely heavily on globally dispersed supply networks that are exposed to regulatory, economic, and logistical uncertainties. The discussion in this section draws together the insights from the literature, examining the implications for theory, practice, and policy.

A primary implication concerns the strategic redefinition of supplier management. Traditionally viewed as a procurement function concerned with cost reduction and transactional efficiency, supplier relationship management is increasingly recognized as a strategic capability that directly impacts organizational resilience, competitiveness, and legitimacy. In the pharmaceutical industry, CBSRM frameworks must incorporate compliance, quality assurance, and intellectual property protection as strategic priorities, given the life-critical nature of the products involved. In construction, frameworks must emphasize project delivery reliability, cost control, and contractual clarity, reflecting the project-based, capital-intensive structure of the industry [99, 100]. For both sectors, supplier management cannot be decoupled from corporate strategy, requiring alignment between procurement practices and organizational goals.

The discussion also highlights the centrality of risk and resilience in CBSRM. The COVID-19 pandemic, Brexit, U.S.-China trade tensions, and Russia's invasion of Ukraine illustrate how geopolitical and global health events can disrupt cross-border supply chains. Pharmaceutical firms faced shortages of APIs, while construction firms experienced material price volatility and shipping delays. These disruptions demonstrate that CBSRM frameworks must prioritize resilience, with risk monitoring, scenario planning, and redundancy mechanisms embedded into supplier management processes. Digital technologies such as predictive analytics, blockchain, and IoT provide opportunities to enhance resilience by enabling real-time risk assessment and proactive decision-making. However, adoption challenges persist, particularly for smaller firms and in regions with limited digital infrastructure.[101, 102].

Another implication is the integration of sustainability into CBSRM. Both sectors are under increasing pressure to ensure that global suppliers comply with environmental and social standards.[103, 104]. In pharmaceuticals, this includes addressing the environmental impacts of chemical manufacturing and ensuring ethical labor practices in developing countries where many APIs are produced. In construction, scrutiny falls on the environmental footprint of materials, carbon emissions in logistics, and labor practices on international project sites. Integrating sustainability into CBSRM frameworks is therefore not only a matter of compliance but also of reputation and long-term competitiveness. For policymakers, this suggests the importance of harmonizing international standards and creating incentives for sustainable cross-border sourcing.[105, 106].

Cultural and relational dimensions also emerge as critical implications. Cross-border supplier relationships are influenced by cultural differences in negotiation styles, communication patterns, and conflict resolution approaches. Trust, transparency, and collaboration are essential for sustaining effective relationships, particularly when legal enforcement across jurisdictions is difficult. Relational contracting and social capital theories underscore that trust-based governance can complement or substitute for formal contracts in cross-border contexts. This has practical implications for managers, who must invest in intercultural training, communication platforms, and relationship-building mechanisms to strengthen global partnerships.

From a theoretical perspective, the literature indicates a need for greater integration across disciplines. CBSRM research currently draws on transaction cost economics, resource dependence theory, relational contracting, and institutional theory [107, 108]. Each provides valuable insights, but few frameworks integrate these perspectives holistically. For example, while transaction cost economics explains governance structures, it does not adequately capture trust and cultural dynamics; relational contracting addresses collaboration but overlooks regulatory heterogeneity. An integrative theoretical framework could provide more comprehensive explanations of CBSRM dynamics and guide more adaptable frameworks across industries [109, 110].

Finally, the discussion reveals important policy implications. The pharmaceutical sector's dependence on offshore API suppliers from a few countries has raised concerns about national security and public health.[111, 118]. Governments are increasingly intervening to encourage reshoring or diversification of supply sources, which directly affects CBSRM strategies. In construction, governments play a key role in regulating cross-border procurement, setting labor and environmental standards, and financing infrastructure projects.[112, 113]. Policies that encourage digital adoption, standardize sustainability requirements, and promote fair supplier practices can significantly strengthen CBSRM outcomes globally [114, 115].

The discussion underscores that CBSRM is a strategic, multidimensional, and policy-relevant domain. For managers, it highlights the importance of aligning CBSRM frameworks with resilience, sustainability, and digital transformation imperatives. For scholars, it identifies opportunities for integrative theoretical development and empirical validation. For policymakers, it demonstrates the critical role of governance in shaping effective cross-border supplier relationships [116, 117].

4. Conclusion

This paper has provided a comprehensive, literature-based review of cross-border supplier relationship management frameworks, with particular focus on the pharmaceutical and global construction sectors. The review traced the evolution

of supplier management from transactional models emphasizing cost and quality to strategic frameworks integrating risk, sustainability, and digital technologies. It highlighted that while the pharmaceutical industry prioritizes regulatory compliance, quality assurance, and intellectual property protection, the construction industry emphasizes project-based collaboration, cost-risk management, and logistical coordination. Despite these sectoral differences, both industries share common challenges of sustainability integration, risk management, and technological adoption.

The findings reveal several key conclusions. First, CBSRM frameworks have become strategic capabilities central to organizational resilience and competitiveness. Second, global disruptions such as pandemics and geopolitical conflicts demonstrate the urgency of embedding resilience and risk management into supplier relationships. Third, sustainability has shifted from a peripheral to a central concern, requiring firms to align supplier performance with environmental, social, and governance standards. Fourth, digital technologies such as blockchain, AI, and IoT offer transformative opportunities for enhancing transparency, traceability, and predictive capabilities, but adoption challenges remain. Fifth, cultural diversity, relational governance, and trust remain indispensable for managing suppliers across borders, underscoring the importance of human and behavioral factors alongside technological solutions.

For practice, the study suggests that firms must design CBSRM frameworks that are both comprehensive and adaptable, balancing analytical sophistication with managerial usability. Tailoring frameworks to industry-specific dynamicswhether compliance-heavy pharmaceuticals or project-based construction, is essential for practical relevance. For research, the study identifies gaps in integrative theoretical development, empirical validation of digital technologies, and operationalization of sustainability metrics in cross-border contexts. Addressing these gaps will strengthen the conceptual and practical foundations of CBSRM. For policymakers, the study underscores the importance of harmonizing regulatory standards, promoting sustainable sourcing, and supporting digital infrastructure to enable effective global supplier relationships.

In conclusion, the development of CBSRM frameworks for pharmaceuticals and global construction remains an evolving but increasingly critical field. By consolidating existing literature and identifying key trends and challenges, this paper contributes to advancing academic debates and practical strategies. Future research should focus on integrative, data-driven, and sustainability-oriented frameworks that not only strengthen supplier relationships but also enhance resilience, innovation, and long-term value creation in the face of global uncertainty.

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