

Review Article

# Sustainable Supply Chain Management for Business Competitiveness: A Systematic Literature Review

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## Abstract

The goal of this systematic literature review (SLR) is to present a thorough examination of the connection between corporate competitiveness and sustainable supply chain management (SSCM). Based on 74 publications from reliable sources, including Science Direct, JSTOR, IEEE Xplore, Google Scholar, Scopus, and Web of Science, this review combines data to highlight important concepts, conceptual frameworks, and research findings. According to the review, supply chain strategies that incorporate sustainability principles can improve social responsibility, environmental performance, and economic viability—all of which support long-term competitiveness. The analysis reveals that among the key success factors within SSC that are related to social and environmental impacts, operational resilience and continuity, financial performance, technological innovation, technological innovation, differentiation, regulatory compliance and industry standards, customer satisfaction and loyalty, and resource efficiency and cost savings. Transparency and traceability, market and reputation benefits, risk management techniques, and circular economy ideas are some of the best ways that SSC practices boost company competitiveness. However, some of the biggest obstacles to supply chain management (SSCM) that undermine firm competitiveness are high beginning costs, complexity, supply chain interruptions, and market constraints. The review expands on our knowledge of the ways in which SSCM boosts corporate competitiveness. Discussions are held regarding conclusions, suggestions for additional study, and theoretical and practical ramifications.

## Keywords

SSC, Business Competitiveness, Sustainability, SLR

## 1. Introduction

The notion of sustainability has garnered noteworthy interest in recent times, especially in the context of supply chain management. The incorporation of sustainable practices into supply chain operations has become a critical strategy for organizations seeking to stay competitive in a constantly changing global economy [74]. Numerous causes, such as customer desire for products sourced ethically, regulatory restrictions, and the realization of possible cost savings and

operational efficiencies, are driving this paradigm shift towards sustainability [14]. SSCs have been acknowledged as a source of competitive advantage, allowing businesses to stand out in the market, reduce risks, and promote innovation [71]. Moreover, implementing sustainable practices can strengthen stakeholder relationships, improve brand reputation, and raise resilience to disruptions—all of which are factors in long-term business performance [60].

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This thorough SLR examines the fundamental ideas, motivations, advantages, and difficulties of SSC management. It does so by utilizing insights from reliable databases to offer a strong, evidence-based viewpoint. To achieve long-term sustainability and competitive advantage, supply chain processes should incorporate environmental, social, and economic factors in a holistic manner [36, 26]. SSC practice adoption is fueled by a complex web of interactions between external and internal forces. Businesses are internally driven to improve operational effectiveness, cut expenses, and minimize risks related to social, economic, and environmental challenges [14]. Supply chain sustainability initiatives are significantly impacted by external factors such as investor pressure, stakeholder expectations, customer preferences, and legal requirements [74].

Businesses can reap countless benefits from switching to SSC management, such as increased stakeholder engagement and brand reputation, better financial performance, and reduced risk [71]. According to research, businesses that have strong sustainability programs do better than their competitors in terms of profitability, market share, and ability to withstand shocks to the market [14, 10]. Businesses have several difficulties and obstacles when attempting to adopt SSC techniques, despite the methods' clear advantages. Fragmented supply chain architectures, a lack of insight into upstream and downstream activities, and the requirement for organizational and cultural transformation are a few examples of these difficulties [12, 82, 76]. In order to overcome these obstacles, the company must cultivate a culture of sustainability and innovation in order to promote stakeholder participation and ongoing improvement [94]. The importance of SSC management in fostering long-term performance and corporate competitiveness is becoming more widely acknowledged. Businesses may improve their resilience, reputation, and value proposition while also helping to achieve favorable societal, economic, and environmental results by incorporating environmental, social, and economic factors into supply chain operations.

The literature on SSC management and its effects on corporate competitiveness is expanding, but a thorough synthesis of the results of previous studies is still required. An SLR provides a methodical approach to finding, assessing, and compiling pertinent academic literature on a certain subject [85]. This study attempts to offer insights into the existing level of knowledge regarding the relationship between SSCs and corporate competitiveness by methodically evaluating the literature. This evaluation also looks for important trends, knowledge gaps, and potential future research avenues in the area. This evaluation includes a wide range of peer-reviewed articles, conference papers, and other pertinent publications due to a broad search of scholarly databases. This review advances knowledge of the ways by which SSC practices affect corporate competitiveness by combining findings from various sources.

As a result, the goals of this SLR are to: identify and ana-

lyze the various SSC components that boost business competitiveness; identify organizational strategies that leverage SSC practices to boost business competitiveness; investigate the difficulties, roadblocks, and constraints that organizations encounter when putting SSC practices into practice; identify gaps in the body of literature and suggest future directions for research to advance knowledge and practice in the area of SSC management and its implications for business competitiveness; synthesize findings from the SLR to offer evidence-based recommendations for policy makers, practitioners, and stakeholders looking to increase business competitiveness through SSC practice; and contribute to scholarly discourse by offering a thorough synthesis of the study findings, theoretical understandings, methodological techniques, and real-world applications pertaining to SSCs and corporate competitiveness.

## 2. Theoretical Frame Work

Supply chain management (SCM) incorporates social, environmental, and economic factors. It entails actions that assure economic viability, limit negative effects on the environment, and advance social well-being [74]. The ability of a business to hold and grow its market position in comparison to its rivals is referred to as business competitiveness. Market share, profitability, and inventiveness are frequently used to gauge it [64]. According to the resource-based view (RBV), businesses can gain a sustained competitive advantage by utilizing special, valuable, and non-replaceable resources and skills [7, 38]. Within the framework of SSCs, businesses use environmental resources and competencies—like eco-design, the utilization of renewable energy, and waste reduction—to boost their competitiveness. According to resource dependence theory, in order for an organization to succeed and survive, it is necessary to manage its relationships with resource providers. These interactions are based on external resources [62]. Once more, Porter's Five Forces Framework examines how industry competition affects a firm's profitability and ability to compete [63]. Within the context of SSCs, sustainability practices can have an impact on corporate competitiveness by influencing elements including supplier power, buyer power, threat of substitutes, threat of new entrants, and competitive rivalry.

The theory of dynamic capacities posits that companies need to consistently innovate and adapt to changing external situations in order to stay competitive [83]. Firms must build dynamic capacities for risk reduction, stakeholder engagement, and environmental management in order to comply with SSCs and be able to predict market trends and adapt to new regulations. Furthermore, people or groups inside organizations may act as institutional entrepreneurs to remove obstacles and promote the adoption of SSC practices in accordance with the institutional entrepreneurship hypothesis [8].

SSC practices can be viewed as innovations that spread via

networks of suppliers, consumers, and competitors, altering industry norms and competitive dynamics, in accordance with innovation diffusion theory [69]. Supply chains must embrace innovation and technology if they are to become more competitive and sustainable [13, 72]. Furthermore, in line with institutional theory [22], businesses may implement socially and ecologically conscious activities in the context of SSCs in order to abide by legal obligations, satisfy client expectations, and preserve their credibility with stakeholders. According to the stakeholder theory, companies' decision-making processes should take into account the interests and concerns of a variety of stakeholders, including as workers, clients, suppliers, communities, and investors [27]. Organizations can effectively solve sustainability concerns by leveraging collective skills and resources through collaboration with suppliers, customers, and other stakeholders [13].

As with corporate social responsibility theory, involving stakeholders in decision-making processes improves transparency, trust, and accountability within the supply chain network [11, 13, 65, 75]. This allows for the integration of sustainability principles into supply chain strategies. Businesses can lower expenses, improve their brand, and lessen the danger of negative social and environmental effects [65, 76]. In a similar vein, the Triple Bottom Line (TBL) Theory promotes businesses to prioritize social and environmental outcomes in addition to economic performance [25]. This allows firms to strike a balance between profit, the environment, and their customers, improving their long-term resilience and competitiveness.

In order to create shared benefit for enterprises and communities, inclusive business models seek to include low-income groups as producers, suppliers, or consumers into value chains [67]. Conversely, network theory highlights the significance of the connections and exchanges that occur between the participants in a network [66]. Supply chain partners must cooperate together and share information for SSCs to function, and network theory can shed light on how these connections boost competitiveness. Similar to this, social capital theory emphasizes the usefulness of social networks, trust, and relationships in accomplishing organizational objectives and adding value [58]. Theory of organizational learning that concentrates on how businesses gather, disseminate, and apply information to adjust to their surroundings [6].

Organizational culture, information gaps, and resistance to change can all be obstacles to the learning and change that SSC techniques frequently need. Furthermore, complexity theory sees organizations as complex adaptive systems that react to environmental changes in a nonlinear way [55]. Complexity theory aids in understanding and managing the interdependencies, uncertainties, and unexpected consequences that can make SSC implementation complex. The capacity of systems to tolerate shocks and bounce back from them is the main subject of resilience theory [43]. By increasing a company's resilience to hazards including supply

chain interruptions, natural disasters, and regulatory changes, SSCs can boost its competitiveness. Ultimately, SSC performance monitoring and improvement depend heavily on efficient performance measuring and reporting systems [80]. Transparency, accountability, and continual development in sustainable processes are made possible by life cycle evaluations, sustainability reporting standards, and key performance indicators [13].

### 3. Methodology

This systematic literature evaluation is conducted in three steps, and it is crucial to identify collective evidence that may be updated with new research [85, 78, 91]. The primary goals of this systematic literature review are to examine strategies that are successfully applied to sustainable supply chains, identify and analyze the success factors of sustainable supply chains in enhancing business competitiveness, and look into the difficulties, roadblocks, and constraints associated with putting sustainable supply chain practices into practice. To find pertinent literature reviews for the search approach [54], because it is advised to include more than one database [87] with keywords like "SSC, business competitiveness, sustainability, SLR" used in combination with boolean operators (AND, OR) to retrieve pertinent literature, we used the databases Science Direct, JSTOR, IEE Xplore, Google Scholar, Scopus, and Web of Science. The included studies were those that examined the relationship between sustainability and business competitiveness, examined SSC management, were published in peer-reviewed journals or academic conferences, were written in English, and we included papers that were 15 years old in order to prevent including studies that were ineligible [57]. The researchers also included articles published from 2010 to 2024, which is a 15-year time frame, as it is recommended that studies be 10–50 years old, Rialp, Rialp & Knight, 2005 cited in [61]. Also, the screening procedure was carried out. Data extraction based on reading the abstract, conclusion, and entire text in relation to the topic [87]. Validity and reliable reliability greater than 0.7 were used to assess quality [73]. We employ thematic analysis, a qualitative method, to synthesize and analyze data in order to find recurring themes, patterns, and insights pertaining to the subject. The significance of these findings for theory, practice, and the direction of future study were discussed during the interpretation and discussion phases. PRISMA, which improves transparency [59], as well as search strategy, inclusion/exclusion criteria, screening procedure, data extraction, quality assessment, data synthesis, analysis, findings, and suggestions, implications and conclusions were all included in the documentation and reporting that was completed. Lastly, we carried out a thorough, systematic literature assessment on sustainable supply chain management for corporate competitiveness by adhering to these methodological stages.

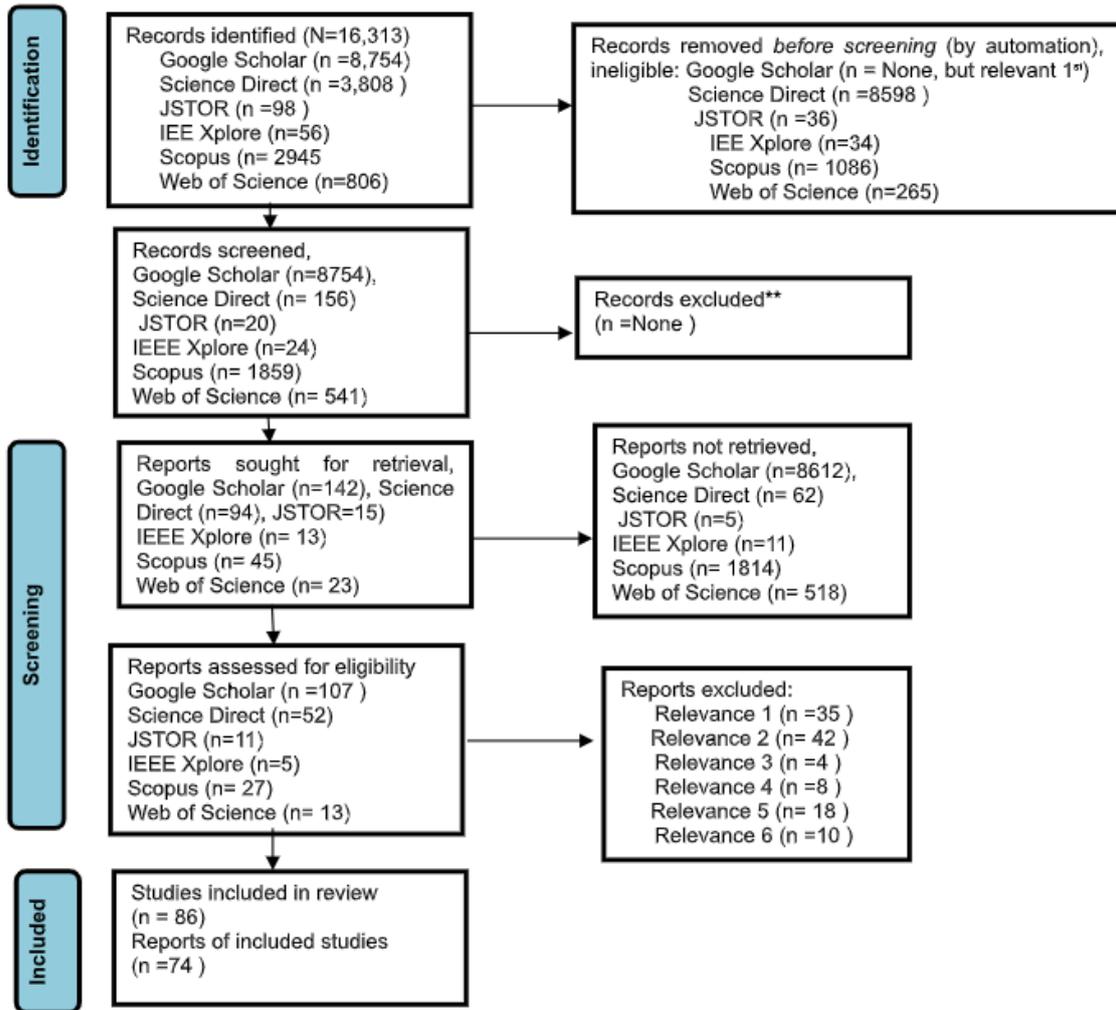


Figure 1. PRISMA.

### 4. Results

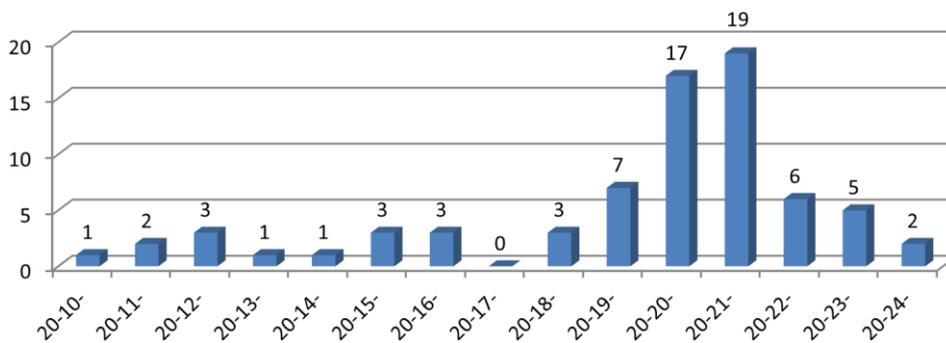


Figure 2. Trends of the study across time.

In order to enable sustainable supply chain managers and practitioners for business competitiveness to take advantage of the insights, more studies are needed to explore additional new insights, including the ones that are recommended, even

though the average trend of the analyzed studies over time appears to be slightly increasing or the graph appears to be skewed to the right in the recent direction.

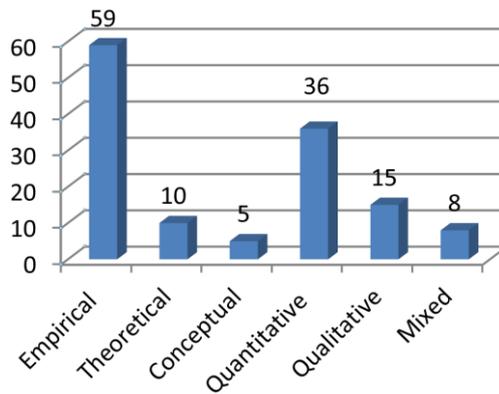


Figure 3. Methodological.

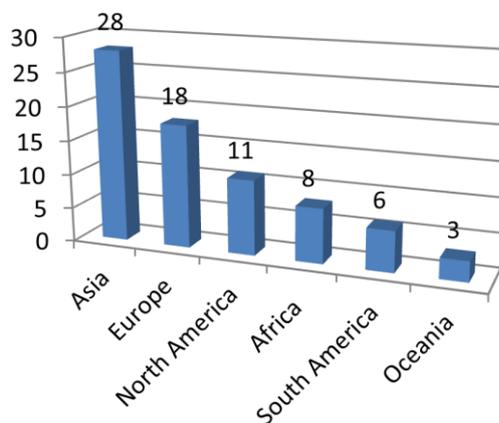


Figure 4. Countries Wise.

It is advised that future research endeavors adopt a mixed approach, as the methodology utilized in the scrutinized papers falls short of this approach. However, we have noticed that a large number of research on the subject of "Sustainable Supply Chain Management for business competitiveness" have been carried out in developed nations, particularly in Eastern and Western nations. Due to the paucity of research in Africa, the topic of "Sustainable supply chain for business competitiveness" has received extensive study. When it summarized, there are typically sustainability for business competitiveness and methodological gaps in addition to nearly no temporal gaps. The results of the SLR reveal a growing body of research on SSC management and its implications for business competitiveness. Key findings consisting the objectives and under each objectives, discussing the variables or themes.

#### 4.1. Success Factors Within SSCs Those Contribute to Business Competitiveness

Current empirical research offers important new insights into the variables affecting SSC competitiveness. The results of reliable database syntheses have been used to identify numerous important components that support business competitiveness in SSCs.

##### 4.1.1. Resource Efficiency and Cost Savings

Through improved resource efficiency and cost reductions, SSC procedures greatly increase firm competitiveness [34]. Companies adopting green supply chain strategies reported considerable reductions in operating expenses [2]. The investigation made clear that cutting waste and improving energy efficiency were key factors in cost savings. Sustainable strategies that maximize resource efficiency also minimize waste and energy consumption, which decreases operating costs and boosts profit margins. Companies who used sustainable procurement strategies profited from economies of scale [94]. Businesses can minimize their material costs and boost the effectiveness of their manufacturing processes by optimizing the utilization of raw resources and cutting waste [42]. Better traceability, shorter lead times, and improved decision-making capabilities are achieved through process optimization through investments in digital supply chain technologies, such as blockchain and Internet of Things (IoT) devices [90]. Strong sustainability policies help a company's bottom line by drawing in more capital and commanding greater market values [28]. Thus, businesses can reap substantial financial rewards by cutting expenses, optimizing resource use, and raising operational effectiveness. These enhancements boost the company's competitive position in the market in addition to improving profitability and financial performance.

##### 4.1.2. Stakeholder Collaboration

Working together with suppliers and partners is one of the most important ways that SSCs may become more competitive [3]. By encouraging creativity, information exchange, and mutual trust among supply chain participants, successful collaboration helps firms become more competitive by improving their ability to adapt to changing market conditions, reduce risks, and seize new possibilities. Companies can jointly develop sustainable solutions to common problems, including waste reduction and resource efficiency, by interacting with stakeholders [76]. Working together with stakeholders makes it easier for best practices and new technologies to be adopted, which improves operational effectiveness and competitiveness [84]. Companies can anticipate disruptions and take proactive measures by working with stakeholders to develop contingency plans and collaboratively assess risks [86]. By lowering compliance risks and related expenses, stakeholder engagement helps organizations comprehend and adhere to changing regulatory requirements [19]. Businesses that involve stakeholders in SSCM projects show a dedication to sustainability and ethical behavior, which cultivates customer loyalty among consumers who value conscientious consumption [28, 17]. Positive relationships are developed and community development activities are supported by working with NGOs and local communities; these outcomes can improve consumer trust and market access [47]. Long-term business partnerships and mutual benefit are enhanced by collaborative connections with suppliers and

partners founded on common values and objectives [76]. In an increasingly competitive global economy, firms can fortify their market position, garner support from stakeholders, and attain sustainable growth through the inclusion of varied stakeholders in sustainability projects.

#### 4.1.3. Technological Innovation and Differentiation

It has been demonstrated that technological advancements, including supply chain transparency through blockchain technology, have a favorable effect on SSCs' competitiveness [21]. Innovative technology adoption can increase efficiency, save costs, and boost overall competitiveness by streamlining supply chain operations, improving visibility, traceability, accountability, and decision-making. Businesses who made sustainable product innovation investments witnessed gains in market share and client loyalty [9]. By creating cutting-edge sustainable products, businesses may stand out from rivals, seize new market niches, and establish a solid reputation for their brands. Process innovations in SSCs, like using lean manufacturing methods and renewable energy, increased productivity and efficiency [24].

New market opportunities can arise from the development of sustainable products that are socially and environmentally responsible [42, 76]. When making purchases, consumers are giving sustainability a higher priority. Customers that care about the environment are more likely to trust and stick with businesses that practice sustainable supply chain management (SSCM) [52]. Because of their ethical production practices and perceived greater quality, sustainable products sometimes fetch higher prices. Profit margins and financial performance can both be enhanced by this premium pricing approach [77, 89]. Early adopters of SSCM techniques differentiate themselves from competitors in terms of sustainability performance and draw capital from socially conscious investors, giving them a competitive edge [28].

Businesses can improve their capacity to handle disruptions by diversifying their suppliers, embracing digital technology for supply chain transparency, and putting risk management techniques into practice [84]. By proactively addressing environmental and social challenges, innovations in SSCM enable businesses stay ahead of regulatory changes and lower the risk of non-compliance and the fines that come with it [19]. In order to foster product and process innovations, differentiate their brands, access new markets, and improve resilience, businesses can achieve sustainable growth and maintain a strong market position. Innovation and market differentiation are essential components of supply chain and supply chain management (SSCM). These factors provide strategic advantages that boost business competitiveness.

#### 4.1.4. Regulatory Compliance and Industry Standards

SSC competitiveness is largely dependent on regulatory compliance and industry standard observance [4]. Businesses that abide with labor laws, environmental rules, and ethical

standards show that they are committed to sustainability and social responsibility, which improves their brand's reputation, customer trust, and competitiveness in the market. Companies that followed strict environmental standards faced fewer legal problems and profited from regulatory incentives, such as tax rebates and subsidies [93]. Businesses can save money and enhance financial performance by taking advantage of government incentives and avoiding fines by adhering to environmental standards proactively and SSCs are more resilient to shocks [45].

Businesses that use SSCM techniques efficiently control environmental effects, like emissions and waste disposal, in order to abide by national and international environmental regulations [19]. Respecting human rights norms and fair labor practices guarantees that labor laws are followed, avoiding legal ramifications for things like worker safety, fair pay, and working conditions [17]. Supply chain resilience is improved by supply chain risk management (SSCM), which recognizes and manages possible risks such as supplier failures, natural disasters, and geopolitical instability. Because of their ability to bounce back from setbacks, businesses are able to minimize losses and hold onto market share [84]. A company's reputation and the trust of its customers may suffer from non-compliance with ethical or environmental norms. By showcasing a dedication to ethical behavior and sustainable methods, SSCM reduces reputational risks [81, 19]. Putting sustainable techniques into reality frequently results in more resource efficiency and lower costs for energy, raw materials, and waste management [76]. SSCM is a key component that offers many advantages that improve business competitiveness, including regulatory compliance and efficient risk management. Through the implementation of risk management strategies, effective environmental, labor, and social standards, and operational efficiency optimization, businesses may protect their brand, cut expenses, and gain a competitive advantage in the market.

#### 4.1.5. Customer Satisfaction and Loyalty

SSC management (SSCM) produces important results including customer happiness and loyalty, which boost business competitiveness. Businesses may strengthen their brand reputation, foster stronger customer relationships, and experience sustainable growth in the market by putting sustainability and ethical practices first. The competitiveness of SSCs is greatly enhanced by the incorporation of social responsibility programs, including as community involvement and fair labor standards [18]. Customers that care about the environment are drawn to businesses that reduce their environmental impact through sustainable practices, such as cutting carbon emissions and utilizing eco-friendly materials [52]. Consumers that care about human rights and ethical corporate conduct are more likely to accept supply chain management strategies that adhere to ethical standards, such as fair labor procedures and transparent sourcing [17].

Customers anticipate sustainable products to match their

expectations for performance and dependability, and they are thought to be of greater quality and durability [90]. Businesses that value sustainability benefit from a positive brand reputation that draws in new business and keeps hold of current clientele through recommendations and positive word-of-mouth [47]. Businesses that put sustainability first will have happier consumers who are more likely to make additional purchases, which will stabilize income streams and increase profitability [52]. Establishing enduring connections with clients based on mutual respect and trust increases brand loyalty and lowers customer attrition, improving overall business stability [47]. Businesses can stand out in crowded markets by differentiating on sustainability and drawing in eco-aware customers who are prepared to pay more for sustainable goods and services [77]. Businesses can increase their market share and clientele by communicating their SSCM programs clearly and interacting with consumers on sustainability-related problems [47]. SSCM's key results, customer loyalty and satisfaction, greatly increase a company's competitiveness. Through the cultivation of trust, improvement of customer experience, encouragement of loyalty, and market differentiation, businesses can attain long-term growth and keep a robust competitive edge.

#### 4.1.6. Social and Environmental Impact

Customers who support businesses that maintain strong social and environmental standards are becoming more and more favored. Consumers respond favorably to sustainable measures like cutting carbon emissions, encouraging ethical labor practices, and aiding in community development [19, 52]. Adopting sustainable practices boosts employee satisfaction and morale because workers are glad to work for organizations that exercise social responsibility [17]. Top talent driven by ideals in line with sustainability and social responsibility is drawn to companies recognized for their dedication to SSCM [47]. Adherence to labor standards and environmental legislation mitigates legal risks and associated fines, hence guaranteeing business continuity [81].

Supply chain resilience is improved by increasing supply chain transparency and traceability, which reduces the risk of supplier failures, resource scarcity, and disruptions caused by climate change [76]. By differentiating on sustainability, businesses can stand out in crowded markets, draw in eco-aware customers, and increase their market share [77]. When making investment decisions, investors are giving greater weight to environmental, social, and governance (ESG) considerations. Strong SSCM processes help businesses draw in sustainable investors and get access to finance on advantageous terms [28]. The social and environmental impact of supply chain management (SSCM) plays a pivotal role in propelling business competitiveness by providing strategic benefits such as heightened brand recognition, heightened employee involvement, reduced risk, and easier access to markets. Businesses may succeed in the long run and make a good impact on the environment and society by incorporating sus-

tainable practices into their supply chains.

#### 4.1.7. Operational Resilience and Continuity

An important component of SSC management (SSCM) that greatly boosts corporate competitiveness is operational resilience and continuity. Businesses may preserve business continuity, reduce interruptions, and obtain a competitive advantage in the market by putting strong risk mitigation and operational flexibility policies into practice. Businesses can anticipate such risks and take proactive measures to mitigate them when there is increased transparency and traceability in the supply chain [76]. Developing a solid rapport with suppliers through cooperation and mutual trust reduces the likelihood of supplier disruptions or failures [84]. Businesses that make SSCM investments are better able to modify their supply chain networks and operations in reaction to unforeseen circumstances, including changes in consumer behavior or international emergencies [81].

By reducing excess inventory and increasing operational efficiency, lean manufacturing and just-in-time inventory systems can improve agility and responsiveness [42]. Long-term sustainability is facilitated by sustainable measures like recycling, trash reduction, and energy efficiency, which also limit environmental effect and cut operating expenses [30]. Businesses can increase their profitability and financial performance—which is crucial for preserving competitiveness—by cutting waste, energy use, and transportation expenses [90]. Resilience is increased and continuity is ensured during crises by creating backup plans, diversifying sources, and putting digital technology for real-time monitoring into place [84]. By minimizing legal risks and potential interruptions brought on by non-compliance, SSCM procedures that adhere to labor and environmental rules help to ensure continued corporate operations [19]. Thus, by lowering risks, improving flexibility, optimizing resources, and guaranteeing continuous operations, operational resilience and continuity are essential elements of SSCM that support company competitiveness. Prioritizing SSCM enables businesses to expand sustainably in competitive and dynamic marketplaces, retain consumer loyalty, and survive disruptions more skillfully.

#### 4.1.8. Investment and Financial Performance

Financial performance and corporate competitiveness can be greatly improved by investing in SSC management (SSCM) projects. Incorporating sustainability into supply chain strategy helps businesses not only save costs and minimize risks, but also draw in sustainable investors, facilitate better access to financing, and increase long-term profitability. Profitability is increased and operating costs are decreased by implementing sustainable practices like recycling, trash reduction, and energy savings [76, 90]. SSCM procedures guarantee adherence to labor laws and environmental rules, lowering related expenses and legal risks [19]. Businesses may efficiently manage risks and sustain business continuity in times

of crisis when they have stronger supplier relationships, traceability, and transparency [81]. Organizations that maintain sustainable practices should expect to expand their market share and customer loyalty as a result of consumers' growing preference for their products and services [47]. Making a difference via sustainability enables businesses to stand out in cutthroat markets and draw in eco-aware customers who are prepared to pay more for sustainable goods [77]. Long-term financial stability is supported by sustainable investments and transparent reporting on SSCM initiatives and good ESG performance [28]. By boosting market access, cutting expenses, lowering risks, increasing financial performance, and drawing in sustainable investments, investments in SSCM considerably increase a company's ability to compete. Prioritizing sustainability in supply chains helps businesses increase operational effectiveness, fortify their position in the market, and guarantee long-term profitability in a cutthroat environment.

## 4.2. Strategies in SSC Management to Contribute to Business Competitiveness

Effective ways for enhancing corporate competitiveness in SSC practices include risk management, transparency and traceability, benefits to reputation and market, and circular economy principles. Maintaining competitiveness in SSCs requires effective risk management methods, such as resilience planning and supply chain transparency [32]. Supply chain disruptions, cybersecurity attacks, and geopolitical instability are just a few examples of the risks that may be actively identified, evaluated, and mitigated to improve organizational resilience, maintain business continuity, and protect competitiveness. One of the most important ways to make SSCs more competitive is to include the concepts of the circular economy into their supply chain operations [49]. Adopting concepts like closed-loop systems, resource recovery, and product reuse can reduce waste, conserve resources, and generate new revenue streams, improving economic efficiency and gaining a good reputation for sustainability draws clients who respect moral behavior, which boosts revenue and market share [44]. Achieving sustainability alignment with customer values can greatly increase customer happiness and loyalty. Businesses that put an emphasis on sustainable practices typically enjoy increases in long-term profitability and repeat business [86]. Building customer trust and preserving competitiveness require ensuring openness and traceability throughout the supply chain [53]. Companies may improve brand credibility, reduce reputational concerns, and obtain a competitive edge by being transparent about their supply chain procedures, product origins, and sustainability performance. Because every business is different and requires customization, the tactics must also be built with that in mind. The automotive [68], food and beverage [10], electronics and technology [53], retail and consumer [79], healthcare sector [41], and construction [74] are some examples of the different

industries with different specific cases. Consequently, it is imperative to effectively adopt industry-specific insights and trends pertaining to SSC management and their consequences for corporate competitiveness across diverse sectors. These observations can help companies make more strategic decisions, provide customized solutions to sustainability issues, and seize new possibilities in their local markets.

## 4.3. Challenges, Barriers, and Limitations Faced by Organizations in Implementing SSC Practices

The difficulties, impediments, and constraints that businesses encounter while putting SSC practices into practice and using them to gain a competitive edge are clarified by recent empirical studies. The analysis and synthesis that follow are based on reliable databases.

### 4.3.1. High Initial Costs

For many organizations, adopting sustainable technologies and practices can be financially challenging due to the large upfront costs. Making the switch to renewable energy sources, like solar or wind power, frequently requires a sizable upfront cash investment. The upfront costs for installation and infrastructure modifications can be prohibitive for small and medium-sized firms (SMEs), making it particularly difficult for them to finance the switch to renewable energy. Similar financial investments are needed to upgrade to energy-efficient machinery [46]. Additional costs for training, system compatibility, and operational adjustments are frequently associated with the integration of smart grid technologies and advanced manufacturing systems, which are crucial for optimizing the benefits of renewable energy and energy-efficient machinery [56]. Furthermore, finance sources that are accessible and specifically designed to support these sustainable activities are frequently lacking. Financial institutions are starting to create green financing options, but not all enterprises, especially those in developing nations, can now afford or obtain these [51]. The difficulty of making the required upfront expenditures in sustainable technologies is further exacerbated by this finance gap.

### 4.3.2. Complexity and Supply Chain Disruptions

Procurement, production, and logistics procedures may need to be significantly altered as a result of managing SSCs, which might add complexity. Purchasing from certified sustainable vendors may lengthen lead times and complicate the process [16]. For example, adding sustainability norms to supplier selection procedures frequently leads to increased procurement costs and longer lead times [15]. Supply chain operations are made more difficult by strict certification standards and the demand for ongoing sustainability practice monitoring [50]. SSCs may experience disruptions due to

things like shifting certification requirements or a shortage of sustainable resources. Production schedules and expenses may suffer as a result of these disruptions [45]. The inclusion of sustainability criteria complicates the buying process. Sustainable procurement adds layers such as environmental impact, social responsibility, and supplier sustainability credentials, whereas traditional procurement focuses primarily on cost, quality, and delivery time [15]. This involves a detailed vetting process to verify vendors fulfill certain sustainability criteria, which can be time-consuming and resource-intensive [50]. Adopting sustainable practices in production frequently necessitates changing current procedures or implementing novel technologies. This move might disrupt established workflows and entail retraining staff, which adds to the complexity and cost [56].

This may lengthen lead times and make logistics planning more difficult. Requirements for sustainable packaging may also affect the number and weight of shipments, which could complicate logistics even more and raise costs. An additional degree of complexity is the requirement for ongoing monitoring of sustainability initiatives. Organic and Fair Trade certifications, for example, call for regular renewal and continual compliance, entailing extra paperwork and verification procedures [50]. In order to maintain compliance with changing standards, companies need to commit resources to the management of these certifications, which includes frequent audits and updates. SSCs can be prone to disruptions due to the restricted availability of sustainable resources or changing certification standards [45].

#### 4.3.3. Others Challenges

Organizations employing SSC procedures face a tremendous problem in complying with complex and developing rules [34]. Adopting sustainable practices is hampered by the need for significant resources and experience to navigate the many regulatory frameworks that vary between industries and geographical areas. Insufficient cooperation and synchronization amongst supply chain participants hinder the successful adoption of sustainable practices [1]. A lack of trust, misaligned incentives, and information asymmetry impede knowledge exchange, innovation, and group action, which undermines attempts to meet sustainability targets. There are organizational and technological difficulties when integrating cutting-edge technologies like blockchain and the Internet of Things into supply chain processes [21]. The adoption of technology-driven solutions is impeded by obstacles such as high implementation costs, interoperability problems, and data security concerns, which limit their potential to improve competitiveness and sustainability.

Budgetary restrictions and scarce financial resources are major obstacles to the adoption of SSC practices [5, 20]. Cultural conventions, entrenched habits, and fear of upheaval limit the adoption of new procedures, technology, and business models, slowing down the shift to SSCs. The complexity and heterogeneity of global supply chain networks provide

problems in implementing sustainable practices [37]. Organizations' capacity to evaluate and compare sustainability performance is hampered by the lack of common metrics and assessment instruments [31]. Organizations find it difficult to monitor their progress, spot areas for development, and effectively communicate sustainability accomplishments in the absence of defined performance indicators and benchmarks. Long-term sustainability considerations are sometimes overshadowed by short-term financial demands and an emphasis on urgent cost reduction goals [92]. Organizations may emphasize cost-cutting initiatives above sustainability investments due to factors such as investor demands for short-term returns, quarterly reporting cycles, and profit maximization objectives.

#### 4.3.4. Market Limitations

Although the market for sustainable products is expanding, not all customers are prepared to pay a higher price. This may reduce market potential and have an impact on how competitively priced sustainable products may operate. While customers' interest and understanding of sustainable products have grown, a sizable portion of them still place a higher priority on cost than sustainability [39]. Similar, although perceived quality and brand trust have an impact on consumers' willingness to pay a premium for sustainable items, many consumers will still choose less expensive options if the difference in price is significant [46]. Diverse markets and geographical areas have varied rates of adoption of sustainable practices and products. In comparison to locations with more eco-consciousness, sustainable products may find it more difficult to find a buyer in areas with lower consumer affluence and environmental knowledge [86].

## 5. Discussion

SSCM is now a crucial tactic for companies looking to maintain long-term competitiveness in a global market that is changing quickly. By incorporating social, economic, and environmental factors into supply chain operations, SSCM helps to match corporate objectives with those of sustainable development [74]. Market demands, regulatory challenges, and an increasing understanding of the strategic significance of sustainability for corporate performance are the factors driving the adoption of SSCM techniques. It is becoming more widely acknowledged that incorporating sustainability into supply chain management is essential to a company's capacity to compete. Businesses that successfully apply supply chain management (SSCM) techniques can gain access to new markets, strengthen customer loyalty, build brand recognition, and cut costs, among other competitive advantages.

Gaining efficiency and cutting costs is one of the main ways SSCM boosts corporate competitiveness. Sustainable techniques, for example, can result in significant cost savings through resource optimization, energy efficiency, and waste

minimization. Research indicates that organizations can lower their operational expenses and improve their environmental performance at the same time by implementing eco-design and green buying practices [70, 88]. Reverse logistics, which involves returning products for recycling, reuse, or appropriate disposal, can also improve resource usage and economic effectiveness [35].

Sustainability has emerged as a crucial element influencing customer choices and brand impressions. Businesses that show a strong commitment to sustainable practices are more likely to win the trust and loyalty of their clients, strengthening their position as market leaders. According to research, companies with well-established supply chain management (SSCM) procedures are frequently seen as more trustworthy and responsible, which strengthens customer retention and brand loyalty [85]. This is especially crucial for sectors of the economy where customers are calling for more ethical and transparent supply chain practices.

Additionally, as governments and international organizations continue to tighten regulations on environmental and social standards, businesses with advanced SSCM practices are more likely to comply with these regulations and avoid potential penalties [14]. This compliance not only helps in avoiding risks but also enhances the firm's ability to compete in markets with stringent sustainability requirements. Businesses that prioritize sustainability are better positioned to meet the growing demand for eco-friendly products and services, thereby gaining access to niche markets that value environmental and social responsibility.

Even while SSCM has potential advantages, there are difficulties in putting it into practice. Businesses frequently encounter major obstacles when attempting to integrate sustainability into their supply chains, especially small and medium-sized firms (SMEs). Adopting sustainable practices can come with significant upfront expenditures, particularly for SMEs with tight budgets. These expenses might go toward new technology purchases, educational initiatives, and adjustments to current supply chain procedures [33]. Having to make these kinds of investments can be a big turnoff, especially for businesses with narrow profit margins. It's crucial to remember that while though SSCM can have significant upfront expenses, over time, these costs may be offset by cost savings from increased efficiency and improved market position.

Complex adjustments to long-standing supply chain relationships and processes are frequently necessary when implementing SSCM. Coordination amongst several stakeholders, each with distinct priorities and interests, is necessary to manage these changes. The complexity of SSCM can lead to opposition from both internal and external stakeholders, including employees, suppliers, and partners [74]. Overcoming this resistance needs excellent communication, leadership, and a clear demonstration of the benefits of SSCM to all parties involved.

Another significant challenge in SSCM is the lack of

standardized measurement tools and frameworks to assess sustainability performance across the supply chain. The absence of clear guidelines and metrics can make it difficult for companies to evaluate the effectiveness of their SSCM practices and to compare their performance with industry benchmarks [40]. This challenge underscores the need for the development of more robust and standardized tools for measuring and reporting on sustainability in supply chain management.

The body of research on SSCM points to a number of topics that require investigation to improve knowledge and application in this domain. Future studies should concentrate on creating SSCM procedures that are affordable, scalable, and available to SMEs. Innovative solutions that can assist smaller businesses in integrating sustainability into their supply chains without resulting in prohibitive costs are needed, given the resource constraints that these businesses confront [33]. The potential of digital technologies, including blockchain and the Internet of Things (IoT), to improve the affordability and effectiveness of SSCM for SMEs might be investigated through research [23].

Longitudinal research is also required to evaluate the long-term effects of SSCM on corporate competitiveness. Even though SSCM's short-term benefits are frequently highlighted in research, a more thorough examination of how sustainable practices change and impact business performance over time is necessary to comprehend SSCM's long-term implications [12]. Research of this kind may yield important information about which sustainability tactics boost corporate competitiveness.

Future study on the use of digital technologies in improving SSCM is also quite promising. Supply chain management could undergo a revolution thanks to technologies like blockchain, IoT, and artificial intelligence, which increase efficiency, traceability, and transparency [23]. Future studies could examine how these technologies can be used to build more resilient and sustainable supply chains and to get around the difficulties associated with implementing SSCM. Sustainable Supply Chain Management (SSCM) is a critical component that boosts brand recognition, creates new market opportunities, and drives cost efficiencies to increase business competitiveness. However, there are a number of obstacles that must be overcome for SSCM to be implemented successfully, such as high costs, complexity, and resistance to change. To fully realize the potential of SSCM, further research is needed to develop scalable and cost-effective solutions, particularly for SMEs, and to explore the long-term impacts of sustainability practices on business performance. As the business environment continues to evolve, SSCM will remain a key strategic priority for companies seeking to achieve sustainable growth and competitive advantage.

## 5.1. Theoretical Insights, Research Gaps, Emerging Trends and Future Research Directions

Key theoretical findings that advance our knowledge of SSCs and corporate competitiveness are identified by the SLR through an analysis of theoretical frameworks and models put forward in the literature. In order to clarify how businesses might gain a sustained competitive advantage, it examines ideas including the resource-based view, institutional theory, stakeholder theory, and dynamic capacities. The review's conclusions, which emphasize the significance of incorporating sustainability principles, encouraging collaboration, and stimulating innovation, enhance the field of SSC management theory.

Several gaps in the current literature have been identified by the synthesizing of information from reliable databases, which will guide future research efforts. Research on the incorporation of circular economy ideas into supply chain operations is noticeably lacking, despite the increased interest in supply chain management (SSCM) [29]. Cross-sectoral comparisons of SSC practices and their effect on business competitiveness have not received much attention [48]. Further research on the adoption and effects of emerging technologies like blockchain, IoT, and AI is still needed, even if several studies have looked at the role of technology in SSCs [53].

The majority of the literature currently in publication concentrates on SSC procedures in large firms, so ignoring the particular opportunities and constraints that SMEs face [92]. Further research on proactive risk management measures and their effect on competitiveness is necessary, even if some studies have looked at how resilient supply chains are to disruptions [68]. More research is required on the social aspects of SSCs, such as labor rights, human rights, and community engagement, even though the environmental aspect has gotten a lot of attention. Standardized metrics and assessment frameworks for evaluating the efficacy of SSC activities are absent from the literature currently in publication [31].

This analysis identifies important gaps in the current literature by combining recent empirical data from a range of reliable sources. These gaps allow us to make recommendations for future research directions that will improve knowledge and application of SSC management and its effects on business competitiveness. In order to drive scholarly discourse and shape future research agendas, the SLR identifies current trends and prospective research areas. It looks into how sustainability initiatives vary across different industries and sectors and identifies transferable best practices that can be used to improve supply chain resilience. It also highlights areas that require more research, such as the integration of circular economy principles, the role of technology in SSCs, the implications of climate change on supply chain resilience, and the opportunities and challenges associated with global supply chain disruptions, examine the possible advantages, difficulties, and effects

of technology-driven strategies for improving competitiveness and sustainability, examine the best ways for SMEs to adopt sustainable practices, get around resource limitations, and use sustainability to their advantage in the marketplace, examine strategies for developing robust supply chains that can help businesses reduce risks and stay competitive in ever-changing markets. Examine how social and environmental sustainability intersect with business competitiveness, with a particular emphasis on creating thorough measurement tools and performance indicators that help organizations monitor their progress, evaluate their performance, and promote ongoing improvements in both sustainability and competitiveness. It will be better to do a longitudinal study to evaluate the shift in time span.

## 5.2. Practical Insights for Managers and Practitioners

The SLR provides useful information for practitioners and policy makers that aim to improve corporate competitiveness through SSC practices by synthesizing the practical implications from the literature. It pinpoints tactics, success criteria, and best practices that businesses can use to incorporate sustainability into their operations, boost productivity, cut expenses, and provide value throughout the supply chain. From a pragmatic perspective, the conclusions drawn from this analysis provide insightful advice to companies looking to improve their competitiveness by using SSC practices. The results can be used by organizations to create and carry out sustainable strategies, involve stakeholders, integrate cutting-edge technologies, and track results. Top management establishes the tone for the company and guarantees alignment with strategic goals when it actively supports sustainability goals. Proactive risk management strategies that enhance Supplier Collaboration, adopting transparent reporting mechanisms, putting circular economy principles into practice, investing in supplier development programs and ensuring compliance, and leveraging innovations and technologies can all help to increase business competitiveness and boost SSC.

## 5.3. Recommendations

Several suggestions are made in light of the review's results. In order to provide evidence-based recommendations for policy-makers, practitioners, and stakeholders seeking to improve business competitiveness through SSC practices, the SLR synthesizes findings from a variety of reliable databases. These recommendations address the need for stakeholder collaboration, leveraging technology and innovation, regulatory frameworks to incentivize and enforce SSC practices, and It is imperative that practitioners undertake training programs and capacity-building activities, integrate sustainability into the core business plan, employ proactive risk management measures, and set up reliable monitoring and reporting mechanisms.

## 5.4. Conclusion

The systematic exploration of literature on SSCs for business competitiveness reveals a multifaceted landscape where environmental, social, and economic dimensions intersect to shape organizational strategies and performance. Throughout the review, various factors influencing business competitiveness within SSCs have been identified, analyzed, and synthesized. Key findings highlight the significance of integrating sustainability principles into supply chain management practices to enhance overall competitiveness. From regulatory pressures to consumer preferences, organizations are increasingly compelled to adopt sustainable approaches to remain competitive in the global marketplace. Additionally, collaboration among stakeholders, investment in technology and innovation, and the alignment of sustainability with core company strategy emerge as significant success drivers in achieving competitive advantage. The evaluation also emphasizes how critical it is to resolve the difficulties and obstacles related to putting SSC practices into practice. These include the intricacies involved in coordinating the supply chain, the scarcity of resources, and the requirement for strong reporting and monitoring systems. Policymakers, practitioners, and stakeholders must work together to create an environment that supports sustainable business practices in order to overcome these obstacles. In addition, the review points out gaps in the body of knowledge and suggests directions for future study to improve knowledge and application in the subject of SSC management. Finally, by adopting comprehensive approaches that combine environmental stewardship, social responsibility, and economic viability, firms can position themselves for long-term resilience and success in an increasingly competitive and dynamic marketplace.

## Abbreviations

ESG	Environmental Social Governance
IoT	Internet of Things
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
RBV	Resource-Based View
SLR	Systematic Literature Review
SME	Small and Medium-Sized Businesses
SSCM	Sustainable Supply Chain Management

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## Author Contributions

**Teshome Bekele Nege:** Conceptualization, Resources, Data curation, Formal Analysis, Funding acquisition, Invest-

igation, Methodology, Writing – original draft, Writing – review & editing

**Mekonnen Bogale Abegaz:** Conceptualization, Investigation, Supervision, Validation, Visualization, Project administration, Writing – review & editing

## Data Availability Statement

The data is available from the corresponding author upon reasonable request.

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## Conflicts of Interest

The authors declare no conflicts of interest.

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## Research Fields

**Teshome Bekele Nege:** Sustainable Supply Chain Management, Business Competitiveness, Green Business Management, Sustainable Development, Green Marketing

**Mekonnen Bogale Abegaz:** Sustainable Supply Chain Management, Business Competitiveness, Green Business Management, Sustainable Development, Green Marketing