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Impact of Supply Chain Management on Business Sustainability: Case of Water Bottling Companies in and Around Finfinnee, Ethiopia

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Abstract: *Background*: Effective supply chain management (SCM) is widely considered vital for enhancing business sustainability, yet empirical evidence across industries and contexts remains limited. This paper aims to address this gap by presenting empirical findings specific to a particular industry, business size, and economic setting. *Methods*: The data are collected from small- and medium-sized water bottling companies in Ethiopia utilizing a Likert scale questionnaire and analyzed using SPPS version 29 using multi-variable regression analysis. *Results*: The findings reveal a statistically significant positive influence of supply chain management practices on economic, environmental, and social sustainability business performances. Accordingly, supply chain internal practices and customer and supplier integration impact business economic sustainability, while customer and supplier integration affect business environmental sustainability performance. Customer integration, supplier integration, and supply chain internal practices significantly influence business social sustainability performance. *Conclusions*: These results highlight the potential for businesses to achieve holistic sustainability goals through targeted improvements in SCM practices. The research results are consistent with most previous studies on this topic, except for a few variations that may need further investigation. The discussion highlighted the intricate links between supply chain management practices and business sustainability, underscoring the need for comprehensive further empirical studies in various contexts.

Keywords: integration; performance; supply chain management; sustainability

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1. Introduction

1.1. Background of This Study

By coordinating various entities within the logistics network and forming strategic business partnerships, supply chain management aims to create a situation where all members can succeed, resulting in a positive outcome for everyone involved [1]. The authors note that supply chain management strongly emphasizes promoting mutual benefits for all parties involved by fostering collaboration and sharing of information. Many authors have shown the positive effects of effective supply chain management on organizations' business performances from different perspectives [2–6]. The authors have seen the positive effects of supply chain management on different aspects of business performance. Table 1 summarizes some previous research findings related to different performance parameters.

Despite the ongoing discussions concerning the contentious issues surrounding bottled water, including its environmental consequences, economic implications, and water politics

and policies, it is noteworthy that the bottled water industry has experienced remarkable growth. According to [7], between the years 2001 and 2015, the global bottled water industry witnessed substantial expansion, with the total volume of bottled water sold in liters increasing from 121 billion to 310 billion, revenues surged from USD 71 billion to USD 183 billion, and per capita consumption soared from 20 L to 43 L. Ref. [8] noted a consistent rise in the per-capita consumption of bottled water, identifying it as the fastest-growing segment in the packaged beverages industry. According to the author, projections indicate an anticipated annual growth rate of 10% for this sector until 2026. In regions where access to reliable and safe tap water is limited, the consumption of bottled water serves as a crucial alternative for consumers seeking quality and hygienic drinking water. Moreover, the growth of the bottled water industry has yielded several positive economic outcomes, including the creation of employment opportunities, particularly for young individuals, and an increase in labor income. Additionally, it contributes to government revenue through taxation, benefiting the overall economy.

Nevertheless, there are significant concerns regarding the environmental impact of the bottled water industry [9–12], and other studies have raised safety issues related to health [13–15]. These concerns require further scrutiny in the context of existing knowledge and regulatory frameworks. However, it seems unlikely that the bottled water industry will be abandoned due to these concerns. Instead, ensuring effective industry management to address these issues would be more prudent. This study evaluated how supply chain management practices can enhance selected water bottling companies' business sustainability performances in and around Finfinnee, Ethiopia. This study explored how supply chain management has supported the case companies in achieving the three sustainability pillars, namely, economic, social, and environmental sustainability.

Effective supply chain management (SCM) is increasingly recognized as essential for driving sustainability across industries. The motivation for this study lies in addressing the unique challenges faced by the bottled water industry—a sector experiencing rapid growth yet grappling with significant environmental and sustainability concerns. This research focuses on Ethiopia, where SMEs play a pivotal role in economic development, and supply chain practices are critical for achieving sustainability goals. The significance of this study is threefold. First, it contributes to the empirical validation of the relationship between supply chain management practices and the three pillars of sustainability—economic, social, and environmental. This study's novelty lies in its thorough evaluation methodology for the three dimensions of business sustainability. Second, it provides practical insights for managers in the bottled water industry to enhance business performance through effective supply chain practices. Third, it informs policymakers on the importance of promoting sustainable supply chain practices to foster economic and social development in developing economies.

1.2. Objectives of This Study

The primary aim of this study is to examine how supply chain management practices influence the sustainability performance of water bottling companies in Finfinnee and the nearby areas of Ethiopia. This study focuses on addressing the following three specific objectives.

1. Examine how supply chain management practices affect business economic sustainability performances. This objective will focus on the economic aspects of sustainability, including profitability, cost-efficiency, and long-term financial viability, in relation to the supply chain practices.
2. Investigate how supply chain management practices affect business environmental sustainability performances. This objective will explore how supply chain manage-

ment decisions impact the company's environmental footprint, such as resource usage, waste management, energy consumption, and pollution control.

3. Analyze how the supply chain management practices affect business social sustainability performances. This objective will focus on the social dimension of sustainability, including labor practices, community engagement, stakeholder relationships, and the company's role in improving societal well-being.

While sustainability's economic, environmental, and social dimensions are closely linked, each objective addresses a specific performance aspect. This study explores how supply chain management practices (SCMPs) contribute to these sustainability dimensions in water bottling companies.

1.3. Literature Review and Problem Statement

1.3.1. Literature Review

The interaction of Supply Chain Management (SCM) practices and business sustainability performance is a complicated and critical field of research. An overview of the concepts related to effective supply chain management and its impact on the sustainability performance of businesses relevant to the themes addressed in this study can be highlighted as follows.

Supply Chain Management (SCM): Although there are several definitions of supply chain management (SCM) in the literature, one noteworthy contribution, centered on the integration concept by [16], deserves attention from readers. According to the authors, supply chain management is "*the integration of key business processes from end user through original suppliers that provides products, services, and information that add value for customers and other stakeholders*". The authors claim that effective supply chain management (SCM) necessitates a shift from managing discrete tasks to incorporating activities into essential supply chain operations. According to [17], integration is integral to supply chain management (SCM). According to [16], businesses are operating in a time of intense internetwork competition, and a business's capacity to successfully integrate its complex network of business relationships will ultimately determine its level of success. Similarly, ref. [18] pointed out that, while SCM definitions significantly vary in the literature, they all emphasize integration and coordination. Three perspectives were covered by various authors when discussing supply chain integrations: internal, customer, and supplier integrations [19–24]; some of these studies focused on one or two of the supply chain integration aspects, while others covered all three.

Supplier integration involves strategic cooperation with suppliers to enhance decision-making and market reputation; customer integration focuses on collaborating with customers to respond to needs swiftly and facilitate information sharing, while internal integration emphasizes cohesive processes and efficient communication between different functional departments related to supply chain management [23].

Supply chain integrations are a vital strategic tool to improve firm performances along diverse supply chains. Studies conducted in different contexts confirmed that well-integrated supply chains drive better business performance. For instance, a study by [17] reveals that supply chain integration significantly enhances operational performance, improving financial outcomes for Chinese companies. Similarly, a study by [25] reveals that supply chain integration enhances supply chain sustainability in Ghana and the UK pharmaceutical firms. On a related note, ref. [26] underscores that integrating dynamic capabilities such as green supply chain integration and flexibility in sustainable supply chain management with Industry 4.0 technologies and circular economy strategies enhances corporate sustainability performance in manufacturing organizations. The recent advancements in Industry 4.0 and digitalization are playing a paramount role in enabling

supply chain integration and enhancing sustainability performance. As companies in supply chains advance towards the use of Industry 4.0, digitalization is playing a paramount role in enabling supply chain integration and enhancing sustainability performance. An instance is a study by [27] which finds that digitalization plays a pivotal role in strengthening supply chain integration in omnichannel retailing, with its impact being stronger on internal operations and customer relationships. Similarly, ref. [28] finds that digital transformation significantly enhances supply chain integration and overall sustainable supply chain performance.

For the purpose of this study, effective supply chain management is defined as the integration of business processes across the supplier, customer, and internal organization functions, strategically aligned to achieve the Triple Bottom Line sustainability objectives of optimizing efficiency, reducing environmental impact, and enhancing economic and social sustainability. This research concentrates on these three integration elements; the tools linked to supply chain management practices associated with these three integration aspects were developed and applied (see Section 2.4). Nowadays, professionals and practitioners are increasingly considering the potential of integrating sustainability into supply chain practices, giving rise to various emerging sub-disciplines within supply chain management. The following section briefly discusses these practices, which aim to enhance the Triple Bottom Line sustainability performances of organizations across the supply chain.

Green Supply Chain Management (GSCM): Green supply chain management is a supply chain management strategy that promotes strong environmental sustainability practices such as eco-design, recyclable product design, green procurement, customer and supplier green cooperation, reverse logistics, and environmental certifications in response to customer, media, government, and investor pressure to implement green practices [29–33]. Reductions in greenhouse gas emissions, solid waste, effluent waste, and the consumption of toxic materials are expected to be the main indicators of improved environmental performance following the implementation of GSCM practices. Evidence from these studies indicates a positive correlation between GSCM adoption and improved environmental performance, highlighting the importance of green supply chain management practices in minimizing ecological footprints. Green supply chain management practices also mediate the relationship between Industry 4.0 and improved supply chain performance. For example, a study by [34] shows that Industry 4.0 enhances manufacturing firms' economic and environmental performance by mediating green supply chain management practices.

Socially Sustainable Supply Chain Management (SSSCM): The concept of socially sustainable supply chain management pertains to the approach taken by business organizations to evaluate and tackle their social impacts beyond environmental concerns. This can be achieved through the implementation of socially responsible supply chain management practices, such as fair labor practices, which aim to reduce unemployment, protect employee health and safety, ensure equal treatment, and prevent social exclusion; ethical sourcing, which involves selecting suppliers based on their compliance with ethical standards, including environmental responsibility, fair labor practices, and transparency to ensure that the supply chain functions ethically and responsibly; and community engagement [35–37]. According to [38], these supply chain social sustainability practices can be divided into six main dimensions: human rights, ethics, philanthropy, safety, health and welfare, and equity. These studies advocate for the adoption of such socially conscious supply chain management practices upstream, midstream, and downstream throughout the supply chain. Recent studies explore various dimensions of achieving socially sustainable supply chains. For instance, ref. [39] examined two key aspects of socially sustainable supply chain management practices—assessment and collaboration—aimed at addressing suppliers' social deficiencies, such as child labor. They concluded that collaboration practices

are more effective than assessment practices in improving suppliers' social performance, with the impact of both significantly enhanced by the relational, structural, and cognitive social capital within buyer–supplier relationships. Similarly, a study by [40], drawing on institutional theory, explored how individual cultural values influence the adoption of socially sustainable supply chain management (SSCM) among Chinese suppliers under the normative institutional pressures of guanxi (interpersonal relationships). The study found that guanxi positively impacts SSCM, which is stronger when supplier representatives exhibit high collectivism and low uncertainty avoidance. Similarly, a study by [41] systematically reviewed the literature on the adoption of digital technology for socially sustainable supply chain management (SSSCM) and proposed a conceptual framework based on the technology–organization–environment (TOE) framework and diffusion of innovation (DOI) theory. The study highlighted the opportunities provided by the emergence of Industry 4.0, which can improve efficiency, transparency, and traceability in supply chains, and the potential for digital technologies to drive more socially responsible practices. However, it also emphasized the challenges, such as the ethical concerns surrounding data privacy, the digital divide, and the difficulty of integrating advanced technologies with existing systems in organizations, all of which must be addressed to ensure the successful adoption of digital technologies for socially sustainable supply chains.

Economic Sustainability and Supply Chain Management: One of the key topics that has received a lot of attention in the literature is the influence of supply chain management techniques on businesses' sustainable economic performances. The research on this topic pays due attention to the possibility of increasing efficiency through lowering inventory costs, mitigating the bullwhip effect, streamlining operations, cutting logistics costs, and cultivating stronger relationships with suppliers [42–45]. The authors discussed the supply chain management practices meant to address these problems as part of efficient and coordinated supply chain management to increase profitability. According to [46], the emphasis on supply chain management practices has been changed from controlling costs passively to proactively influencing profitability and competitiveness. The authors noted positive and significant associations between supply chain management capabilities and various aspects of business performance, including market and financial performances. Recent studies on supply chain management, with regards to the economic sustainability performance of business organizations, are increasingly focusing on promoting circular economy principles with potential integrations with Industry 4.0 technologies aimed at resource efficiency, cost reduction, new revenue opportunities, and long-term resilience through practices like recycling, reuse, and waste minimization [47–49].

Sustainable Supply Chain Management (SSCM): Some authors highlighted the relationship between supply chain management and business sustainability initiatives, integrating the economic, environmental, and social aspects of the Triple Bottom Line (TBL) paradigm, forming a comprehensive standpoint [31,50,51]. According to [52], while economic performance is still important, the concept of SSCM goes beyond traditional business concepts; rather than concentrating only on one aspect of sustainability, SSCM incorporates the idea of sustainable development with specific references to the three dimensions of the Triple Bottom Line (TBL). Likewise, ref. [53] pointed out that SSCM necessitates an expanded application of SCM. The author claims SSCM strongly emphasizes business theory and practice's social, ecological, and economic facets. This study focuses on the TBL indicators concerning the business sustainability component. See the variable descriptions in Section 2.4. Similar to economic sustainability performance, the overall sustainability performance of businesses along the supply chain is increasingly being discussed from the perspective of leveraging Industry 4.0 technologies to enhance sustainability. For instance, a study by [54] explored the role of Industry 4.0 technologies in advancing sustainable

supply chain management (SSCM) and identified key areas for future research. The study examined technologies such as IoT, cloud computing, big data, AI, blockchain, and digital twin and underscored the potential of these technologies to enhance SSCM and suggest their application in assessing sustainability performance through environmental, social, and governance (ESG) metrics. Similarly, a study by [55] proposes a framework that integrates five Industry 4.0 technologies—cloud services, artificial intelligence, big data analytics, blockchain technology, and the Internet of Things—to support sustainable supply chain management under circular economy principles, enhancing decision-making through data across various stages of the product lifecycle, including design, manufacturing, delivery, usage, and end-of-life management. Similarly, a study by [56] summarized the current literature on the potential of Industry 4.0 in the context of the triple bottom line for supply chain management and highlighted the holistic impact of Industry 4.0 on supply chain management, focusing on the environmental, social, and economic dimensions of sustainability, while analyzing the interrelations and potential conflicts between these dimensions.

Supply chain management (SCM) plays a pivotal role in shaping the performance of businesses across various industries. Research in the field of SCM has highlighted its significant impact on business performance. Table 1 summarizes key findings from some literature by relating them to the sustainability pillars.

Table 1. Summary of the effect of supply chain management practices on different aspects of business sustainability performances. Purpose: This table summarizes key insights from the literature regarding how supply chain management (SCM) practices impact various aspects of business sustainability performance across the three sustainability pillars (economic, environmental, and social), as well as crosscutting parameters.

Refs.	Business Performance Parameter	Sustainability Pillar	Key Remarks
[1,42,44,45,57–59]	Inventory Cost Optimization	Economic	SCM reduces costs by improving inventory control, mitigating the bullwhip effect, and enhancing logistics efficiency. This strengthens supplier relationships and boosts profitability.
[29,32,43,60–62]	Environmental Sustainability	Environmental	SCM promotes practices that minimize environmental impact, including waste reduction and resource optimization. Green SCM strategies focus on pollution control and sustainable operations.
[63–66]	Quality Control	Crosscutting	SCM ensures high product quality by managing suppliers, maintaining transparency, and adopting proactive quality management strategies.
[67–71]	Innovation	Crosscutting	SCM fosters trust and collaboration, enabling innovation to adapt to market changes and improve supply chain responsiveness.
[72–75]	Risk Management	Crosscutting	SCM enhances resilience by integrating supply chains and reducing uncertainties caused by external disruptions.

Table 1. *Cont.*

Refs.	Business Performance Parameter	Sustainability Pillar	Key Remarks
[76–78]	Information Technology	Crosscutting	Advances in IT, such as data analytics, AI, and blockchain, revolutionize SCM by enabling real-time visibility, better decision-making, and improved performance on sustainability pillars.
[79–83]	Market access, including expansion to the global market	Economic	SCM facilitates global market expansion through cost savings and strategic integration with suppliers.
[36,37,84,85]	Ethical and social responsibility throughout the supply chain	Social	SCM ensures ethical practices, safe working conditions, and human rights compliance, promoting social sustainability across the chain.
[86–90]	Customer satisfaction	Crosscutting	SCM ensures on-time deliveries and responsiveness, enhancing customer satisfaction and loyalty.

1.3.2. Problem Statement and Research Gaps

The relationship between supply chain management practices (SCMPs) and business sustainability performance is inherently intricate, encompassing complex interactions across economic, environmental, and social dimensions. Moreover, these relationships are influenced by various factors and dynamics, such as epidemics like COVID-19 [91–93], wars and natural disasters [94,95], and other disruptions. These dynamics' impacts have exposed vulnerabilities in supply chain management, particularly in maintaining resilience, resource efficiency, and effective collaboration—all of which are essential for achieving sustainable supply chain practices. Supply chains are dynamic systems in which decisions made at one stage of the supply chain could result in trade-offs or synergies in Triple Bottom Line (TBL) sustainability outcomes along the entire supply chain. Understanding these interdependencies is crucial, as SCMP affects organizations' operational efficiency and overall contribution to sustainable development. However, despite the growing recognition of supply chain management practices' strategic importance in driving sustainability, several gaps and challenges persist in the literature. These challenges are grouped under three main topics to offer structure and clarity: the absence of comprehensive frameworks, the inadequate assessment of contextual variances, and the scant empirical support for theoretical models.

First, most existing research often focuses on one or two sustainability aspects, lacking holistic frameworks highlighting the interdependencies between supply chain management practices and the TBL sustainability indicators [43]. In this regard, most studies focus more on the environmental and economic aspects, while the social aspects of sustainability are less addressed in the literature [36,96]. Studies addressing the interplay between various SCM practices and the three sustainability indicators are needed to capture possible synergies and trade-offs. Some studies have recommended holistic frameworks to address this challenge, but there are only a few such studies with a focus on diverse perspectives. For instance, ref. [97] proposed an integrated approach to designing a resilient and sustainable supply chain by aligning customer needs with technical requirements, identifying key priorities such as reduced carbon footprint, affordability, and green supply chain management to guide industrial improvements. The current study seeks to address this concern by

examining the impact of SCMP on business sustainability performance through a holistic framework that integrates all dimensions of the Triple Bottom Line (TBL).

Second, much of the existing research on SCM and business performance is general and may not account for different industries' unique characteristics and challenges, primarily in underdeveloped and emerging economies [98]. Exploring contextual variations is crucial for understanding how SCM practices impact sustainability performance across sectors, regions, and organizational sizes, an aspect currently underexplored in existing research. Studies noted that contextual variations are critical in shaping how supply chain management practices influence sustainability performance. This is evident from findings that highlight varying trade-offs in sustainability priorities across different stages of the supply chain, driven by institutional pressures and contextual factors [99]; the moderating effect of firm size on sustainable supply chain management outcomes, with distinct impacts on small, medium, and large enterprises [100]; the importance of adapting lean supply chain management practices to specific supply chain contexts for optimal performance [101]; and the need for customized strategies to implement sustainable supply chain management practices in emerging economies, emphasizing resource prioritization and managerial commitment [102].

Third, while theoretical correlations between supply chain management practices and business sustainability performances are better established, a significant portion of such theoretical frameworks lacked empirical verifications [35,103]. For instance, as in ref. [103], after investigating the framework development status for sustainability in supply chain management using systematic literature review methods, identified the need for framework verifications as one of the future study directions. According to the authors, about 42% of the reviewed frameworks lack verification, necessitating additional research to determine their dependability and validity for real-world application, and most prior studies that attempted verifications used large survey methodologies prone to potential response bias, highlighting the necessity for in-depth case study research to improve sustainability performance within supply chains. Furthermore, inconsistencies exist between empirical findings and theoretical foundations, as well as among empirical results themselves. For example, scrutiny of studies conducted by [43,104–106] unveils inconsistencies between empirical findings and theoretical underpinnings as the data from these studies did not affirm the impact of specific supply chain management practices on at least one element of Triple-Bottom-Line sustainability indicators. This underscores the need for additional empirical investigations in diverse scenarios to establish a robust linkage between supply chain management and business sustainability. Such insights have practical implications, urging business organizations to prioritize supply chain management functions as strategic tools for success.

This study fills these knowledge gaps in the fields of supply chain management (SCM) and business sustainability. First, it fills a gap in the existing literature by taking a holistic approach that integrates all three dimensions of the Triple Bottom Line (TBL) sustainability indicators, emphasizing the interdependence of various SCM practices and environmental, social, and economic aspects. Second, this study fills a gap in knowledge on possible contextual variations across industries, countries, and organizational sizes by giving insights into how SCM methods affect sustainability performance, particularly in SMEs and emerging economies. Third, by empirically proving the recognized correlations between SCM practices and business sustainability, this study contributes to theoretical developments by addressing the lack of empirical verifications in existing frameworks. Due to their specific challenges related to resource management, packaging, waste disposal, and environmental impact, water bottling companies present a unique opportunity to address these research gaps. To the best of our knowledge, there is a lack of empirical

evidence on the application of supply chain management practices to address sustainability performances in water bottling companies. A systematic search using the combination of "Supply Chain Management" AND "Water Bottling Company" AND "Sustainability" in Scopus, Web of Science, and Google Scholar revealed no relevant studies in Scopus or Web of Science and only 23 results in Google Scholar, none of which addressed this specific intersection comprehensively. This highlights a significant research gap and justifies the focus of our study. Thus, by focusing on this industry, our study aims to contribute empirical evidence that can inform broader applications of SCMP to enhance sustainability across various sectors. In a nutshell, this research will contribute to the theoretical development and practical understanding of how SCM practices can be utilized to achieve business sustainability performances.

1.4. Conceptual Framework and Hypothesises

1.4.1. Conceptual Framework

The conceptual framework is formulated as shown in Figure 1 in light of the supply chain management theories and the literature reviewed in the preceding section. The present study explored the supply chain management practices from three perspectives related to the focal company: supply chain management related to internal practices, backward integration with suppliers, and forward integration with customers. The focal companies in the present study are the bottling water companies. The business sustainability performances were explored from the following three sustainability pillars: economic, environmental, and social.

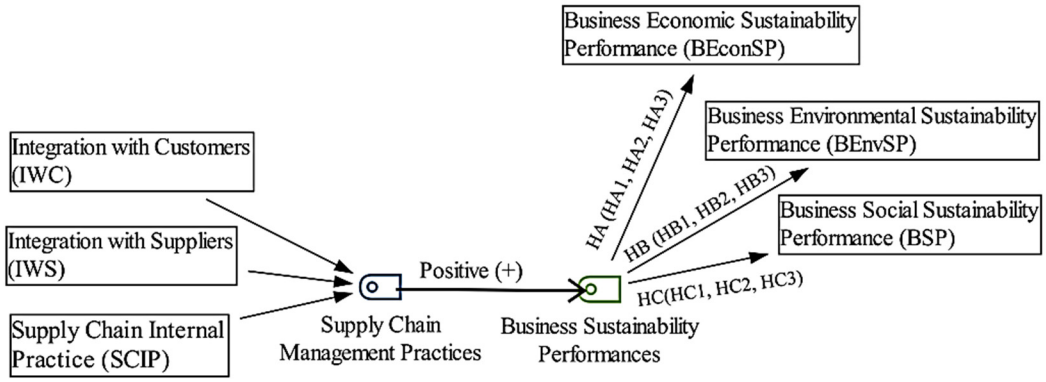

Figure 1. Conceptual framework of the impact of supply chain management practices on business sustainability performances (HA, HB, and HC represent study hypotheses).

1.4.2. Hypothesises

Based on the overview of existing research and the conceptual framework illustrated in Figure 1, three primary hypotheses were developed, each supported by subsidiary hypotheses. In the subsequent section, these hypotheses are presented.

HA: *Supply chain management practice has a positive impact on business economic sustainability performance.*

HA1: *Supply chain internal practices positively affect business economic sustainability performance.*

HA2: *Integration with suppliers positively affects business economic sustainability performance.*

HA3: *Integration with customers positively affects business economic sustainability performance.*

HB: *Supply chain management practice has a positive impact on business environmental sustainability performance.*

HB1: *Supply chain internal practices positively affect business environmental sustainability performance.*

HB2: *Integration with suppliers positively affects business environmental sustainability performance.*

HB3: *Integration with customers positively affects business environmental sustainability performance.*

HC: *Supply chain management practice has a positive impact on business social sustainability performance.*

HC1: *Supply chain internal practices positively affect business social sustainability performance.*

HC2: *Integration with suppliers positively affects business social sustainability performance.*

HC3: *Integration with customers positively affects business social sustainability performance.*

1.5. Theoretical Foundations of Study Framework and Hypotheses

Section 1.3 highlights the crucial role of supply chain management practices (SCMPs) in promoting business sustainability, measured through Triple-Bottom-Line (TBL) indicators. This section provides a concise overview of the theoretical basis of this study's conceptual framework and hypotheses. Based on existing theory and empirical evidence, this study proposes that SCMPs, evaluated through internal practices, supplier integrations, and customer integrations, are anticipated to impact business sustainability positively. This impact spans the three primary hypotheses of this study: economic (HA), environmental (HB), and social (HC) dimensions, as depicted in Figure 1.

1.5.1. The Impact of Supply Chain Management Practices on Business Economic Sustainability Performance (HA)

The hypothesis, denoting that effective supply chain management practices (SCMPs) positively impact a business's economic sustainability performance (HA), is consistent with SCM theory that underscores that proficient implementation of these practices significantly contributes to a business's economic sustainability, fostering long-term resilience and competitive advantage. This contribution manifests in diverse core areas, as summarized in Table 1, including efficiency and cost reductions, risk mitigation, enhancing communications, reducing lead times, and fostering innovations. To highlight these concepts, SCMPs underscore process optimization, minimizing inefficiencies and reducing waste across the supply chain. This results in cost reductions across production, transportation, and inventory management. Through operational streamlining, SCM facilitates cost savings, enhancing profit margins and financial stability, thereby advancing economic sustainability. Through enabling stable and collaborative supplier relationships, SCMPs facilitate joint investment and innovations along the supply chains, contributing to economic sustainability. These concepts are substantiated by prior studies, such as [67–71]. Furthermore, in SCM theory, identifying and managing supply chain risks is vital for economic sustainability [72–75]. Proactive risk management ensures a stable and resilient supply chain, a lesson reinforced by events like the COVID-19 pandemic, highlighting the critical role of risk mitigation and resilient supply chains in achieving economic sustainability. Moreover, efforts to align SCM practices with environmental sustainability meet the growing demand for eco-friendly products, positively influencing the economic sustainability of the business [29,32,43,60–62]. Additionally, a well-managed supply chain enhances a company's competitiveness in the

market, providing a sustainable advantage over competitors [79–83]. SCM also contributes to improved customer satisfaction through on-time delivery, product quality, and agile response to market demands [86–90]. Satisfied customers are more likely to remain loyal and contribute to the long-term economic success of the business. In summary, hypothesis HA is grounded in the fundamental principles of supply chain management, which empower business organizations to cultivate efficiency, manage risks, optimize operations and logistics by fostering robust relationships and effective communication, and elevate customer satisfaction. This, in turn, allows businesses to lay the groundwork for enduring economic success and resilience.

1.5.2. The Impact of Supply Chain Management Practices on Business Environmental Sustainability Performance (HB)

The hypothesis positing that supply chain management practices (SCMPs) positively impact business environmental sustainability performance is based on the principles and theories within the SCM. The intersections of supply chain management with environmental sustainability are related to various domains, including Green Supply Chain Management (GSCM), Life Cycle Assessment (LCA), Circular Economy Principles, and Environmental Management Systems (EMSs). GSCM theories underscore the importance of integrating environmental considerations into supply chain decisions, as emphasized by [29,32], showcasing how environmentally conscious SCM practices can reduce environmental impacts, such as lower emissions and resource conservation. Likewise, effective SCM aligns with LCA principles, optimizing processes to minimize environmental footprints at each stage; particularly when it comes to defining environmental sustainability requirements related to a product, life-cycle assessment is the most frequently employed method [62]. The notions within the contemporary SCM practices embrace circular economy principles that advocate product reuse, recycling, and remanufacturing, thereby reducing environmental burdens associated with traditional supply chains, as noted by [107]. Moreover, Environmental Management Systems (EMSs) and GSCM can synergize, with EMS adopters likely to enhance environmental sustainability within their organization and across their supply chain network, resulting in an overall improvement in environmental performance [108,109]. In sum, the positive impact of supply chain management practices on business environmental sustainability performance (HB) is rooted in well-established SCM theories and related domains.

1.5.3. The Impact of Supply Chain Management Practices on Business Social Sustainability Performance (HC)

The proposition that states supply chain management practices (SCMPs) positively influence business social sustainability performance is supported by the Triple Bottom Line (TBL), Resource-Based View (RBV), and Institutional theories, among others. Viewed through the Triple Bottom Line (TBL) lens, sustainable supply chain management (SSCM) practices enhance the social dimension by promoting responsible business practices, ethical sourcing, and engaging with stakeholders. This approach underscores the equal importance of the TBL framework's economic, environmental, and social aspects, emphasizing their interconnected nature [110]. Similarly, ref. [111] noted the interdependence among the three sustainability dimensions, evident in the positive mediating links between environmental management practices and operational performance, as well as between environmental and social performance and financial performance. According to the study, these mediation outcomes align with the resource-based view (RBV), indicating that cultivating capabilities through environmental management practices bolsters firms' financial performance and supports the triple bottom line. Hence, SCM practices constitute valuable and rare resources that enhance social sustainability through fostering ethical labor practices and community

relations. Furthermore, institutional theory suggests that businesses aligning with societal expectations, including those related to social sustainability, benefit from these practices. Striving for sustainability involves exploring new opportunities and leveraging current capabilities concurrently [112], where SCM practices have a paramount role. Hence, this study's HC is well-grounded in supply chain management theories and related domains.

1.6. Significance of This Study

This study holds significance, contributing to theoretical advancements and practical applications. On a theoretical level, this study offers noteworthy theoretical advancements in the domains of business sustainability and supply chain management (SCM). First, it fills in a research gap in the current literature by taking a comprehensive approach that incorporates all three aspects of the Triple Bottom Line (TBL) sustainability indicators. This study's emphasis on the interconnectedness of different SCM practices with environmental, social, and economic issues provides a more thorough knowledge of the complex relationships within sustainable business practices. Second, this research advances the theoretical field by providing empirical verifications for established relationships between SCM practices and business sustainability. This addresses a significant gap in current frameworks that lack empirical verifications. This study thus enhances the reliability and applicability of theoretical frameworks for real-world implementation. Third, this study fills a gap in testing the applications of supply chain management practices across various industries, countries, and organizational sizes, providing insights into how SCM practices affect sustainability performance, particularly in SMEs and emerging economies. Finally, the findings of this study can also serve as a basis for further research. On a practical level, the research offers valuable insights for business organizations seeking to enhance sustainability through effective supply chain management. This study provides practitioners with actionable knowledge by understanding the interdependencies between various SCM practices and environmental, social, and economic elements. Additionally, this study's findings can be used to establish and improve sustainability policy in various sectors.

2. Materials and Methods

2.1. Data Source and Sampling Strategy

This study is based on primary data collected from key personnel in water bottling companies located in Finfinnee and its vicinity in Ethiopia. The targeted respondents were general managers, production managers, supply and purchasing managers, marketing managers, inventory management managers, and other relevant employees working within these functional units. The selection of these respondents was intentional to ensure the inclusion of individuals with decision-making roles, technical expertise, and practical experience in supply chain management practices. These employees have varying levels of experience, and their positions and experience within the organizations enabled them to understand their respective units and company operations deeply.

In the study area, there are 20 officially registered water bottling companies. We assessed these companies' engagement in supply chain management practices and their willingness to participate in this study using a preliminary evaluation. As shown on the Google-created map in Figure 2 (highlighted with red map pins), 10 companies were deliberately chosen for further investigation. The selected companies collectively employed 156 individuals, who comprised the second tier of this study's population. Out of this total, data were successfully obtained from 112 employees, as detailed in Table 1. Respondents were chosen to represent various roles directly related to this study's focus, including production, marketing, inventory, supply, and purchasing management. Employees in technical and security roles were excluded as their responsibilities were deemed unrelated

to this study's objectives. By selecting respondents who actively contribute to supply chain operations, this study ensures a comprehensive and relevant data source aligned with its research objectives.

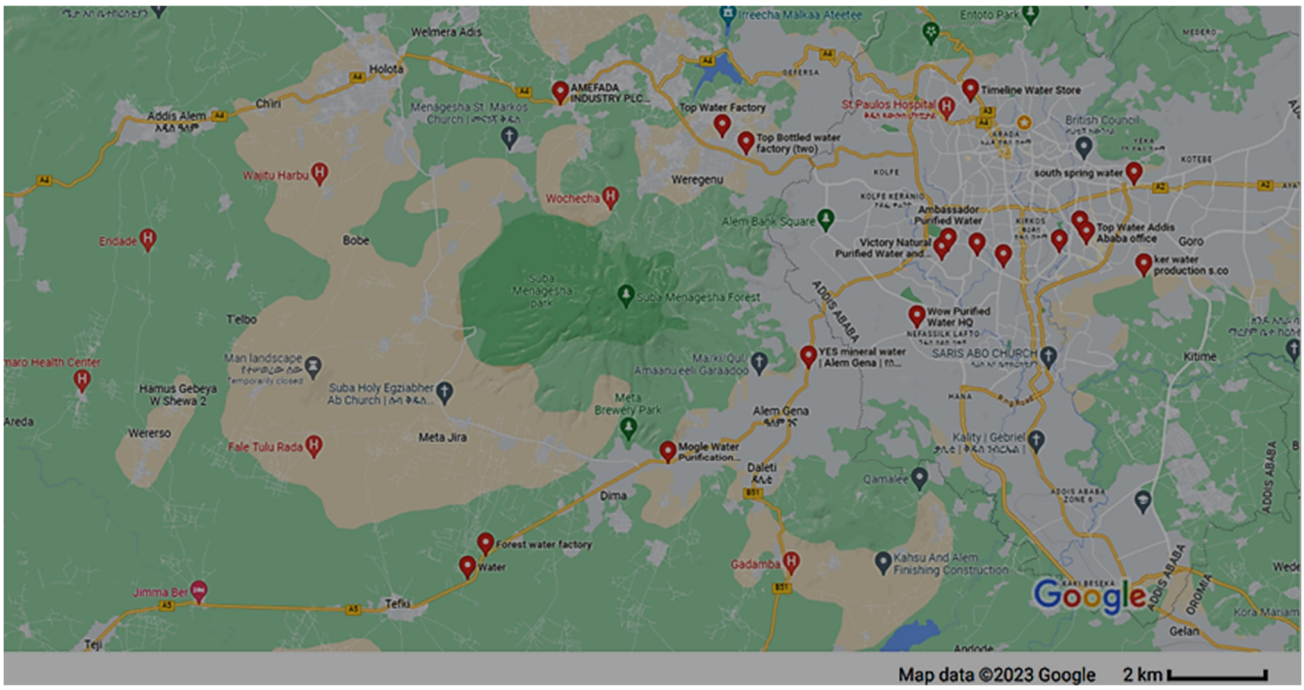

Figure 2. Water bottling companies in Finfinnee/Addis Ababa and nearby areas (Source: Google Maps; see the red with a white center Map Pin).

Table 2 provides information on the number of employees from whom the data was collected for each water bottling company, with the figures based on the actual counts in their respective companies.

Table 2. Sample size from each water bottling company (source: author's computations, utilizing the actual count of employees within each company).

S. No.	Selected Water Bottling Company	Sample from the Company
1	Aqua Addis Water	13
2	Top Bottled Water	13
3	Gold Water Bottling	13
4	Daily Water Company	13
5	Fham Water Bottling	10
6	Share Water	10
7	AVA Water	10
8	Hagere Bottled Water	10
9	Konjo Water	10
10	Joy Water	10
	TOTAL	112

2.2. Data Collection Instruments

Closed-ended questionnaires and structured interview guides were used to collect the data. The questionnaires were created with a 5-point Likert Scale, ranging from "Strongly Disagree" to "Strongly Agree". Additionally, we interviewed section heads and general managers to supplement and validate the information gathered from the questionnaires. The questionnaires were employed to evaluate supply chain management practices and the performance of the three pillars of business sustainability.

2.3. Description of the Variables and Measurement Checklist Employed

For this study purpose, we established six variables: supply chain internal practice (SCIP), integration with suppliers (IWS), integration with customers (IWC), business economic sustainability performance (BEconSP), business environmental sustainability performance (BEnvSP), and business social sustainability performance (BSSP). The first three variables were considered independent, while the latter were treated as dependent. Each variable was assessed using seven questionnaire elements, and the average scores of all seven questions were used in the final regression analysis for all the variables.

We integrated performance measurement tools from prior studies to establish concise questionnaire-based approaches for evaluating supply chain management and business sustainability performances. As outlined in the data collection checklist in Appendix A, the examination of supply chain management practices employs assessment from three angles. These three perspectives encompass practices concerning internal supply chain operations, supplier integration, and customer integration. Previous studies have also examined supply chain management practices from three similar viewpoints. For example, scholars like [22,113–115] have explored these aspects as internal integration, supplier integration, and customer integration and have analyzed their correlations with different performance metrics.

In this study, each of these supply chain management variables is assessed based on its associated activities. Accordingly, first, the evaluation of supply chain internal practices in this study entails assessing whether companies have the following in place: effective product and material planning and scheduling, transparent and efficient bidding systems for material procurement, robust quality inspection and control mechanisms, effective inventory management systems, well-integrated logistics systems across organizational units, integrated internal functions relevant to the supply chain, and ongoing efforts to reduce process setup time and costs. The tools/questionnaires used to measure supply chain internal integration were developed based on previous studies [116–118] on similar matters. Moreover, despite variations in checklist details, the checklists we have employed to evaluate internal supply chain practices also resemble those used by [43] for assessing lean and resilient supply chain management practices in relation to sustainability performance.

Next, we assessed the integration with suppliers using seven distinct criteria. These encompass the presence of any formal partnerships with suppliers, the extent of formal/contractual commitments with suppliers, the level of dependence on a small number of reliable suppliers, the establishment of long-term relationships with suppliers, joint investment for solving problems, including conflict resolution with suppliers, the adherence to mutual trust and principles of fairness in dealings with suppliers, and sharing of business information (manufacturing and other) and the extent to which the companies incorporate issues related to suppliers into their planning and goal-setting process. These tools have been developed by synthesizing the elements from the tools suggested or employed by previous researchers [19,119–121] to evaluate supplier integration.

The third variable of this study, customer integration, was assessed using seven questionnaire elements. These elements were employed to examine whether the water bottling companies in our case study adhere to practices such as having a quality-related feedback system from customers, regularly evaluating customer satisfaction, assessing and being aware of customers' expectations, and creating a system of communications with individual customers, incorporating customer ideas in new product development, responding promptly to changes in customer market demands, providing a high level of customer service, and ensuring on-time deliveries of customer orders. These checklists have been condensed from the works of [21,122,123] to assess customer integration.

The economic sustainability was evaluated by utilizing a set of inquiries designed to gauge different aspects, including consistent revenue growth, positive cash flows, ongoing cost reduction and process improvement, continual increase in market share, consistent investment in technology, and adaptability to technological advancements within the industry. Furthermore, we have posed inquiries regarding a well-defined plan for advancing business growth in the coming years and an assessment of the overall financial/profit performance in the past few years. Business economic sustainability is a multifaceted concept that was examined from various angles in different studies. In this study, we have tailored the checklist to align with the context of small and medium-sized enterprises (SMEs) operating within the water bottling industry. For a more comprehensive set of performance parameters related to business economic sustainability, we suggest readers refer to [124–127].

The evaluation of business environmental sustainability performance involved assessing seven questionnaire elements that were condensed from a checklist outlined in the ISO 14001 [128] guidelines for implementing and complying with environmental management systems and instructions for their effective utilization. Accordingly, the assessment measured how companies were performing in terms of their energy consumption, control of Greenhouse Gas Emissions (GHEs), generation and management of waste, participation in initiatives related to environmental conservation and biodiversity, striving for resource efficiency (including water usage), adherence to environmental regulations, and their engagement with communities and stakeholders to mitigate the environmental impact of their operations.

Finally, for the business social sustainability parameter, the checklists were developed based on a thorough analysis conducted by [129], who revealed that a substantial portion of the social sustainability performance matrix revolves around aspects of occupational health and safety systems, product responsibility, human rights, community development, and diversity. Consequently, the tool used for evaluating this aspect examines how companies address social sustainability in their internal and external operations. To accomplish this, a series of questions that delved into several crucial areas were employed. These areas included assessing whether water bottling companies have clear policies and initiatives aimed at improving diversity and inclusion, implementing a social responsibility code, running programs to enhance employee well-being and development, establishing community engagement initiatives, allocating dedicated resources and budgets for community support, and conducting monitoring and supply chain audits to verify ethical and socially responsible practices in their supply chains.

2.4. Model Identification, Diagnosis, and Data Analysis

2.4.1. Model Identification

A multivariable regression model was used to check the relationship between the hypothesized dependent and independent variables, as presented in Figure 2. Multivariable regression, a widely utilized statistical technique, involves constructing a unified regression model that accommodates multiple dependent variables and is applicable across various domains [130,131]. In this case, this study involved three multivariable linear regression equations with three independent variables. The general linear regression equation of this study that is adopted from [132] is presented as follows:

$$y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

where

y represents dependent variables, in the present case, Equation 1—Business Economic Sustainability Performance (BEconSP), Equation 2—Business Environmental Sustainability Performance (BEnvSP), and Equation 3—Business Social Sustainability Performance (BSSP);

Xi, represents independent variables, in the present case, Supply Chain Internal Practice (SCIP), Integration with Suppliers (IWS), and Integration with Customers (IWC);

β_0 is the intercept;

β_1, β_2, and β_3 are the regression coefficients for the respective independent variables;

ε is the error term.

2.4.2. Model Diagnosis

An evaluation of the model and data was conducted from two angles. First, a reliability test was conducted. As explained in Section 2.3, this study employed the average scores of the questionnaire elements for both predictors and predicted variables. In such scenarios, the reliability tests took precedence over all analyses, as suggested by [133]. Second, an assessment was conducted on the model's goodness of fit, examining how well it aligns with the data. For this purpose, various diagnostic tests with standard parameters were conducted to evaluate the goodness of fit, as indicated in [134]. Accordingly, the fitness of the model to the data was assessed using various statistical techniques, including R-squared (R^2), ANOVA parameters such as F tests, and Root Mean Square Error (RMSE) tests. Multicollinearity among the independent variables was assessed by examining Tolerance and VIF values. Lastly, we conducted a bootstrap sensitivity analysis with 1000 resamples and 95% bias-corrected confidence intervals to check the robustness of the regression results.

2.4.3. Data Analysis

This study employed a multivariable regression model defined in [135]) for data analysis using SPSS version 29. According to the authors, this statistical model analyzes the connections between multiple variables; it is used to determine how a set of independent variables collectively influence a dependent variable while controlling for the interdependencies between these independent variables. Multivariable regression models are commonly employed to analyze data and identify the relationships between variables, aiming to create a concise mathematical model that aligns with the subject matter, accurately represents the data, and offers valid predictions for independent datasets [136]. This method allows for examining hypotheses and the comparative visualization of the extent to which predictor variables affect the predicted variable by comparing coefficients/estimates and statistical significance.

Figure 3 shows the research process flow chart, illustrating the steps involved in the research process and the corresponding outcomes at each stage. It highlights the logical flow of the process, providing a clear representation of how this study progresses from identifying the research gap to drawing conclusions and offering directions for future research.

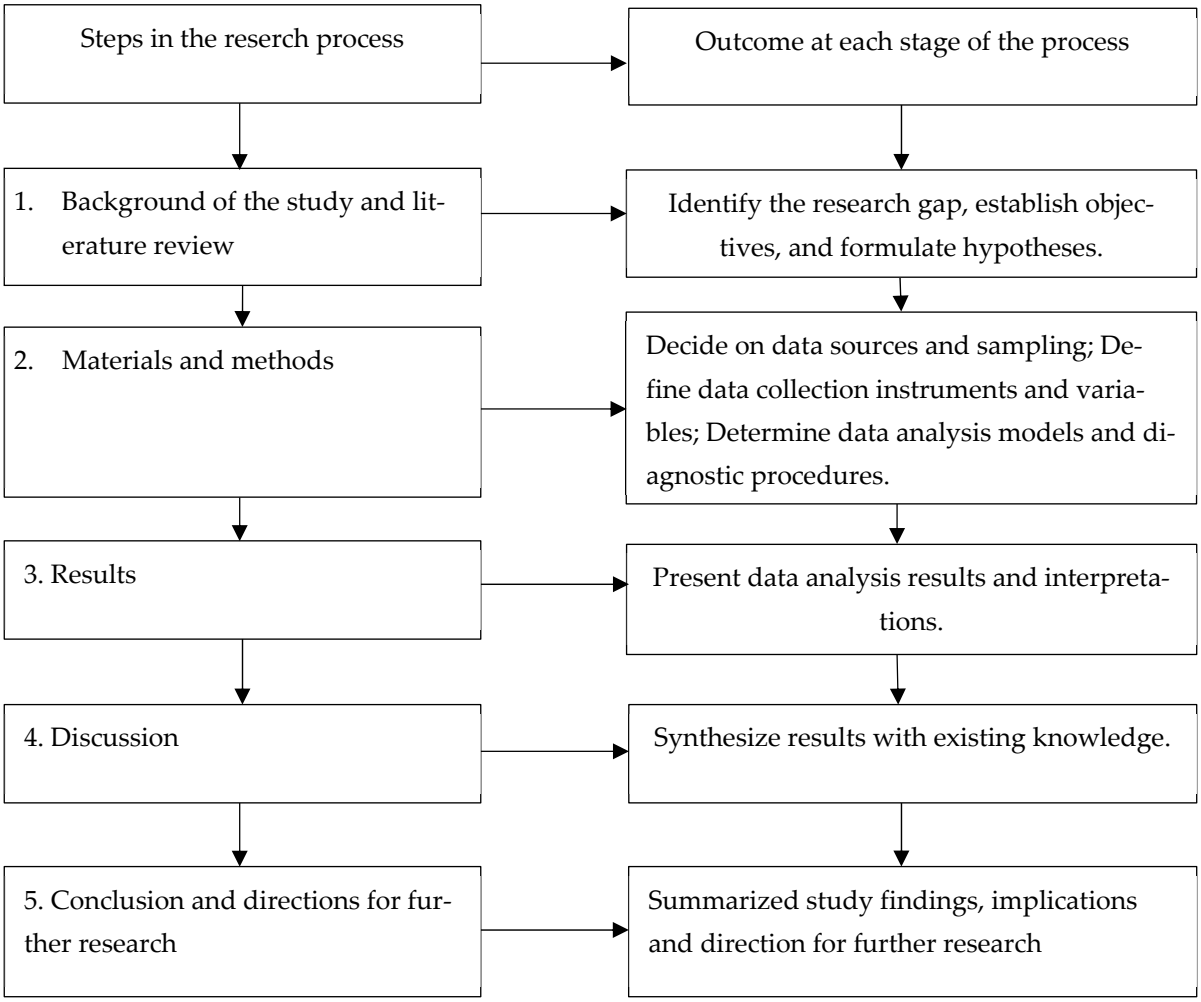

Figure 3. Research process flow chart showing the key steps and outcomes at each process stage.

3. Results

3.1. Model Test Results

3.1.1. Reliability Test Results

As outlined in the methodology section, the reliability of the data gathered through tools employing the Likert Scale was assessed. Table 3 provides a summary of the results obtained from the reliability assessments.

Table 3. Summary of Cronbach's alpha reliability test results.

S. No.	Variables	Number of Questions	Cronbach's Alpha Reliability Coefficient
1	Supply Chain Internal Practice (SCIP)	7	0.739
2	Integration with Suppliers (IWS)	7	0.767
3	Integration with Customers (IWC)	7	0.804
4	Business Economic Sustainability Performance (BEconSP)	7	0.672
5	Business Environmental Sustainability Performance (BEnvSP)	7	0.756
6	Business Social Sustainability Performance (BSP)	7	0.794

Cronbach's Alpha is a widely used statistic to assess the reliability of a measurement instrument [137,138]. Different researchers have suggested various acceptable ranges for Cronbach's Alpha values. For instance, ref. [137] noted Cronbach's Alpha values between 0.7 and 0.9 as acceptable ranges. Nunnally (1967), as cited in [139], suggested Cronbach's

Alpha values of from 0.5 to 0.6 for primary research, from 0.7 to 0.8 for basic research, and from 0.9 to 0.95 for applied research. The present study's Cronbach's Alpha values, as presented in Table 3, align with the recommendations from these authors, suggesting that the tested items are reliable for this study.

3.1.2. Model Goodness-of-Fit Test Results

This study evaluated how well the model fits the data by conducting diverse statistical diagnostic techniques, including R-squared (R^2), F tests from ANOVA, and Root Mean Square Error (RMSE) tests. Tolerance and VIF values were examined to check for possible Multicollinearity problems among the independent variables. Table 3 summarizes the outcomes from these tests compared to the acceptance criterion as noted in various statistics and econometrics literature [140,141] for the three regression equations employed in this study. The results in Table 4 show that the model's goodness of fit aligns with the literature recommendations, indicating that it accurately captures the underlying relationships within the data and adheres to the established standards in the literature.

Table 4. Model diagnosis results against literature standards.

S. No	Model Goodness of Fit Parameters	Standard Value	Test Results for This Study		
			Equation 1 BEconSP	Equation 2 BEnvSP	Equation 3 BSSP
1	R-squared (R^2) *	>0.70	0.773	0.558	0.897
2	F statistics significance	<0.05	<0.001	<0.001	<0.001
3	Root Mean Square Error (RMSE) **	-	0.062	0.140	0.030
4	Tolerance (TOL)				
	Supply Chain Internal Practice (SCIP)	>0.10	0.617	0.617	0.617
	Integration with Suppliers (IWS)	>0.10	0.531	0.531	0.531
	Integration with Customers (IWC)	>0.10	0.370	0.370	0.370
5	Variance Inflation Factor (VIF)				
	Supply Chain Internal Practice (SCIP)	<10	1.620	1.620	1.620
	Integration with Suppliers (IWS)	<10	1.882	1.882	1.882
	Integration with Customers (IWC)	<10	2.704	2.704	2.704

* The acceptable R^2 value varies by field and model complexity, with many preferring a higher value like 0.70 or above; however, authors like [142] argue that lower values, such as 0.1, can be acceptable in social science research depending on the context. ** Smaller RMSE indicates better model performance; ref. [143] noted that RMSE is at its best when it equals 0 and at its worst when it reaches positive infinity.

3.1.3. Sensitivity Analysis

A sensitivity analysis was conducted using a bootstrap procedure with 1000 resamples and 95% bias-corrected confidence intervals to check the robustness of the regression results. The analysis confirmed the stability of the findings for the relationships between the predictors (Supply Chain Internal Practice, Integration with Suppliers, and Integration with Customers) and the three dependent variables: Business Economic Performance, Business Environmental Performance, and Business Social Performance.

For Business Economic Performance, the model explained 77.3% of the variance (R^2 = 0.773, CI [0.70, 0.83]), indicating a strong fit. The most influential predictor was Supply Chain Internal Practice (SCIP) (B = 0.437, CI [0.305, 0.545]), followed by Integration with Customers (IWC) (B = 0.318, CI [0.194, 0.438]) and Integration with Suppliers (IWS) (B = 0.185, CI [0.100, 0.256]). These results highlight the significant contribution of internal practices and external collaborations to economic performance.

For Business Environmental Performance, the model explained 55.8% of the variance (R^2 = 0.558, CI [0.47, 0.63]). Significant predictors were Integration with Suppliers (IWS) (B = 0.379, CI [0.221, 0.560]) and Integration with Customers (IWC) (B = 0.413, CI [0.252,

0.563]). SCIP, however, did not show a significant effect (B = −0.080, CI [−0.216, 0.069]), suggesting internal practices may have a limited direct impact on environmental outcomes.

For Business Social Performance, the model explained 89.7% of the variance (R^2 = 0.897, CI [0.85, 0.93]), indicating an exceptionally strong fit. The strongest predictor was Integration with Customers (IWC) (B = 0.588, CI [0.519, 0.661]), followed by Integration with Suppliers (IWS) (B = 0.198, CI [0.126, 0.261]) and SCIP (B = 0.129, CI [0.057, 0.202]). These findings emphasize the pivotal role of customer integration in enhancing social performance outcomes.

The bootstrap confidence intervals for all significant predictors excluded zero, underscoring the reliability of the results. Full details of the sensitivity analysis are provided in Appendix B.

3.2. Impact of Supply Chain Management Practices on Business Economic Sustainability Performances (BEconSP)

Table 5 displays the regression analysis findings and the corresponding hypotheses concerning the impact of supply chain management (SCM) practices on business economic sustainability performance. The results in Table 5 demonstrate how SCM practices were able to predict a business's economic performance within the required significance level ($p < 0.05$). Notably, the supply chain internal practice (SCIP) emerged as the most influential factor of business economic sustainability performance, showing a standardized beta coefficient of 0.464 at a highly significant level of $p < 0.001$. Similarly, the integration with customers also significantly influenced the business's economic sustainability, with a standardized beta value of 0.40 at a significance level of $p < 0.001$. Integration with suppliers was also found to be statistically relevant in impacting a business's economic sustainability performance, with a standardized beta coefficient of 0.195 at a significance level of $p < 0.002$. All three supply chain management practice variables utilized in this study were identified as statistically significant factors for predicting a business's economic sustainability performance. Thus, the empirical data collected fully supported this study's first hypothesis (HA) with the three sub-hypotheses (HA1, HA2, and HA3).

Table 5. Impact of SCM practices on business economic sustainability performance.

Independent Variables	Coefficients	Sig.	Hypothesis	Remark Based on the Result
Supply Chain Internal Practice (SCIP)	0.464	<0.001	HA1	Supported
Integration with Suppliers (IWS)	0.195	0.002	HA2	Supported
Integration with Customers (IWC)	0.400	<0.001	HA3	Supported
Dependent Variable: Business Economic Sustainability Performance (BEconSP)				

3.3. Impact of Supply Chain Management Practice on Business Environmental Sustainability Performance

The results in Table 6 illustrate the influence of supply chain management (SCM) practices on a business's environmental sustainability performance with the associated hypotheses. According to the findings in Table 6, two of the SCM practice variables used in this research were statistically significant in predicting a business's environmental sustainability performance. Specifically, the integration with customers and integration with suppliers displayed standardized beta coefficients of 0.484 and 0.372, respectively, indicating their significant influence on a business's environmental sustainability performance, both with a high statistical significance ($p < 0.001$). On the other hand, the supply chain internal practices did not significantly influence a business's environmental sustainability performance, failing to meet the required level of statistical significance at $p < 0.005$. In

summary, two of the three supply chain management practice variables investigated in this study have been confirmed as statistically significant factors in predicting a business's environmental sustainability performance, thus supporting two of this study's sub-hypotheses (HB2 and HB3) of the second hypothesis (HB).

Table 6. Impact of SCM practices on business environmental sustainability performance.

Independent Variables	Coefficients	Sig.	Hypothesis	Remark Based on the Result
Supply Chain Internal Practice (SCIP)	−0.079	0.334	HB1	Not Supported
Integration with Suppliers (IWS)	0.372	<0.001	HB2	Supported
Integration with Customers (IWC)	0.484	<0.001	HB3	Supported
Dependent Variable: Business Environmental Sustainability Performance (BEnvSP)				

3.4. Impact of Supply Chain Management Practices on Business Social Sustainability Performance (BSSP)

The assessment of how supply chain management practices affect a business's social sustainability performance is summarized in Table 7. The results in Table 7 show that the three variables, specifically, supply chain internal practice (SCIP), integration with suppliers (IWS), and integration with customers (IWC), have been found to impact business social sustainability performance significantly with standardized beta coefficients of 0.134, 0.203, and 0.722, respectively, and all at highly significant *p*-values of less than 0.001. In terms of level of influence, integration with customers (IWC) stands out as the most significant factor, given its highest beta coefficient value (0.722). In sum, all the variables examined in this study were found to be statistically significant in their influence on a business's social sustainability performance. This indicates that the empirical data from this research supports this study's third hypothesis (HC) with all three sub-hypothesises (HC1, HC2, and HC3).

Table 7. Impact of SCM practices on business social sustainability performance.

Independent Variables	Coefficients	Sig.	Hypothesis	Remark Based on the Result
Supply Chain Internal Practice (SCIP)	0.134	<0.001	HC1	Supported
Integration with Suppliers (IWS)	0.203	<0.001	HC2	Supported
Integration with Customers (IWC)	0.722	<0.001	HC3	Supported
Dependent Variable: Business Social Sustainability Performance (BSSP)				

3.5. Summary of Tests of Hypothesises

The findings in Table 8 summarize the test results for the nine sub-hypotheses related to the three primary hypotheses we initially proposed in this study. The data reveal that this study confirmed eight out of the nine sub-hypotheses through empirical evidence. These results suggest that implementing supply chain management practices positively impacts the sustainability performance of businesses, as assessed across the three key sustainability dimensions: economic, environmental, and social. In other words, the water bottling companies that well-implemented supply chain management practices showcased enhanced outcomes across economic, environmental, and social sustainability measures.

Table 8. Summary of the test results of the hypotheses of this study.

	Hypotheses	Coefficients	Sig.	Remark Based on the Result
HA	HA1: Supply chain internal practices positively affect business economic sustainability performance	0.464	<0.001	Supported
	HA2: Integration with suppliers positively affects business economic sustainability performance	0.195	0.002	Supported
	HA3: Integration with customers positively affects business economic sustainability performance	0.400	<0.001	Supported
HB	HB1: Supply chain internal practices positively affect business environmental sustainability performance	−0.079	0.334	Not Supported
	HB2: Integration with suppliers positively affects business environmental sustainability performance	0.372	<0.001	Supported
	HB3: Integration with customers positively affects business environmental sustainability performance	0.484	<0.001	Supported
HC	HC1: Supply chain internal practices positively affect business social sustainability performance	0.134	<0.001	Supported
	HC2: Integration with suppliers positively affects business social sustainability performance	0.203	<0.001	Supported
	HC3: Integration with customers positively affects business social sustainability performance	0.722	<0.001	Supported

4. Discussion

Diverse studies have shown the crucial role supply chain management (SCM) plays in influencing the sustainability performance of businesses. Some studies refer to the supply chain management practices striving for sustainability as green supply chain management (GSCM), while others refer to it as sustainable supply chain management (SSCM) [30,31,144]. The findings of this study are complementary to these studies in the sense that they empirically support the idea that supply chain management practice positively impacts the sustainability performances of businesses. In the following paragraphs, we will examine a few prior pieces of research in contrast to the current study regarding business sustainability performance under the three pillars.

4.1. Supply Chain Management's Impact on Business Economic Sustainability

For any business organization, economic sustainability is at the forefront. Ref. [124] described a business's economic sustainability as "a business of staying in business". The author believes that understanding the actual mechanisms that enable businesses to survive and thrive is a distinct and notably more challenging subject that deserves study attention. The contribution of supply chain management in aiding organizations in staying in business has been a subject of investigation since the beginning of supply chain management theories, which stated its aim was to improve companies' competitiveness. Supply chain management (SCM) as a management philosophy involves a comprehensive perspective, strategic approach, and firm focus on delivering improved customer value to enhance customer satisfaction, leading to more competent companies along the entire chain [59]. Supply chain management emphasizes the system perspective and promotes the competitiveness of the entire chain rather than a specific company within the chain; the realm of specific business-to-business competition has come to an end and, today, businesses find themselves held in an era characterized by competition within interconnected networks [16,145]. This study found that supply chain management practices—internal supply chain practices, supplier integration, and customer integration—significantly impact economic sustainability performance. While there may be variations in the viewpoints

considered and the factors examined, the results of this research align with prior studies in certain aspects. Accordingly, the findings of this study align with prior research, such as [146], which demonstrated that effective SCM practices enhance financial outcomes for SMEs in the developing country, Indonesia. Similarly, the studies carried out by [31,144,147] all observed a positive association—whether it be a direct link or one mediated by other factors—between the adoption of supply chain management practices (SMPs) and economic sustainability performance. This study confirms these prior studies by providing statistically significant results indicating that supply chain management measured from internal, supplier, and customer integrations strengthens economic sustainability performance by improving operational efficiencies. The positive relationship observed in this study is likely due to the interconnected nature of SCM practices that optimize resource utilization, reduce operational costs, and enhance customer satisfaction—factors crucial for economic sustainability. In contrast, other authors' findings suggest that issues revolving around supply chain management practices and business economic sustainability performance require additional exploration and scrutiny. For instance, in the research of [43], which involved a combination of a literature review and a case study focused on the Portuguese automotive industry, it was found that not all supply chain management practices related to lean, resilient, and green SCM practices exhibited a significant influence on all aspects of supply chain sustainability performance. Instead, only specific elements, including "waste elimination", "supply chain risk management", and "cleaner production", were found to impact all three dimensions of business sustainability consistently. However, the current study shows the broader applicability of supply chain management practices in driving economic sustainability. This difference could be attributable to variations in study subject focus (integration vs. different aspects such as waste elimination and risk management), industry focus (water bottling vs. automotive), or regional context (Ethiopia vs. Portugal). In contrast to the current study and many other previous studies, a few studies have also noted that supply chain management practices fail to improve economic sustainability. For instance, refs. [104,105] noted that implementing sustainable supply chain management practices in emerging economies like China and Iran impacts environmental performance, not economic/cost and social aspects. This lack of impact on economic sustainability could be attributed to the high initial costs of sustainable supply chain management (SSCM) implementation, limited access to resources and expertise, and overemphasized and compliance-driven focus on environmental regulations rather than strategic economic goals. Additionally, the short-term operational focus of businesses in emerging economies, combined with weak supply chain collaboration and intense market pressures, may prevent firms from fully realizing the economic benefits of SSCM.

Therefore, as the preceding paragraph highlights, this study enriches existing knowledge and contributes positively to reducing inconsistencies in findings regarding the influence of supply chain management practices on economic sustainability. Nevertheless, it remains essential to rectify these disparities by conducting thorough empirical investigations in diverse industries and economic settings (including both developing and developed contexts).

4.2. The Impact of Supply Chain Management Practices on the Business Environmental Sustainability Performance

This study found that supplier and customer integration significantly impact environmental sustainability, while internal supply chain practices did not show a statistically significant effect. These results complement earlier works, such as those by [32,148–152], which showed that supply chain management practices, specifically, green/sustainable supply chain management practices, can help companies reduce their environmental impact. Based on existing knowledge, adopting sustainable supply chain management can be justified

through various means, such as companies committing to energy-efficient manufacturing and relying more on renewable energy sources through supply chain networks [153–156]. Supply chain management (SCM) can also be considered for its opportunity to enable the implementation of green procurement practices, innovative logistics, and optimization of transportation routes [157,158]. Additionally, supply chain management practices enable improvements and use of technologies for resource efficiency, waste reduction and management, recycling of byproducts, and pollution prevention and control [159–162]. Supply chain management practice is also justified for enabling environmental sustainability by engaging stakeholders, suppliers, and customers to manage risks and address challenges related to greenhouse gas (GHG) emissions and mitigation efforts of the climate change effects [163,164]. This study evaluated the environmental sustainability performance of the businesses from some of these perspectives, and the findings majorly supported the established belief that supply chain management practices have a significant positive impact on a business's environmental sustainability performance. The complementarity of the findings could be justified as sustainable supply chain management through supplier and customer integrations likely impacts environmental sustainability by fostering the adoption of green practices across the supply chain, such as energy-efficient production and logistics.

Nonetheless, while the overwhelming majority of the literature asserts the beneficial impact of supply chain management practices on the environmental sustainability performance of businesses, some authors noted that not all elements of supply chain management practices they used to evaluate business environmental sustainability showcase significant influence on environmental sustainability performances of the businesses [43,106]. The current study also noted that internal supply chain practices did not significantly affect business environmental sustainability. The lack of significance in internal practices may reflect operational inefficiencies or limited green initiatives within the surveyed companies, suggesting that these practices require a stronger organizational commitment to achieve measurable environmental benefits. While the current study positively addresses such inconsistency gaps in the literature, it shows the need for more research, including the use of diverse industry-specific empirical data, as we indicated in the context of the business economic sustainability parameters.

4.3. Impact of Supply Chain Management Practices on Business Social Sustainability

In a broad sense, a company's dedication to social responsibility or its performance in achieving social sustainability pertains to the actions and results it achieves concerning its influence on its workforce and the community. Social sustainability in the context of supply chain management has not received as much attention as economic and environmental sustainability [36,96]. However, nowadays, businesses and the research community are acknowledging heightened emphasis on evaluating how businesses impact society, reflecting the growing awareness of social responsibility in today's business landscape. The literature on supply chain management practices in relation to social sustainability discusses how businesses aim to benefit society, protect human rights, and minimize negative social impacts. In essence, we can assess a company's social sustainability performance by examining it from two perspectives: one concerning the company's internal practices and the other concerning its impact on the broader community.

Internal social sustainability practices: social sustainability within an organization encompasses its practices in managing its workforce. This involves various aspects such as treating employees fairly and ethically, providing equitable compensation, ensuring safe working conditions, offering avenues for career growth, complying with labor regula-

tions and standards, and fostering diversity and inclusion to promote workplace equality and equity.

Community engagement: Social sustainability that extends beyond the business realm assesses how businesses interact with the communities where they operate, aiming to impact social progress positively. This includes but is not limited to activities such as backing local charities, promoting educational initiatives, participating in infrastructure development, and guaranteeing that their supply chains uphold ethical and equitable labor standards.

This study revealed a significant positive impact of supply chain management practices on business social sustainability. The findings align with previous research, such as the work of [31,165,166], which also observed that effective supply chain management could improve the social sustainability of businesses. The positive influence of SCM on social sustainability in these studies could arise from the companies' focus on both internal and community engagement practices, which lead to improving workforce conditions and public welfare as part of their broader sustainability efforts. In contrast, the study of ref. [104] did not find a significant relationship between supply chain management practices and social sustainability performance, and [167] pointed out that the social sustainability performance of businesses can fluctuate depending on several factors, including their years of operation, the specific country or economic environment in which they are situated, and the industry they belong. The lack of a significant link between SCM practices and social sustainability, as noted by a few authors, could be attributed to factors such as cultural differences, varying regulatory environments, economic conditions, and industry-specific challenges that affect the implementation and effectiveness of these practices.

While there is increasing attention on business social sustainability literature, the concepts related to social sustainability are often multifaceted, and consistent empirical research in this area is inadequate. In this respect, this study contributes to filling the inconsistencies and insufficiency of knowledge in this area by providing evidence that supports the idea that successful supply chain management positively impacts business organizations' social sustainability performances. However, there is a clear need for further research to better understand the impact of supply chain management practices on social sustainability in business.

Before summing up the discussion, it is better to highlight the interconnected and mutually reinforcing nature of the variables in this study. While we have primarily examined the one-way influence of independent variables on dependent variables, as is commonly done for simplicity in many studies, it is essential to recognize that these relationships can often form a vicious circle or a self-reinforcing cycle. For instance, consider the relationship between supply chain management practices and economic performance. Logically, it is not just that effective supply chain management practices lead to economically viable businesses, but it also makes sense that economically viable businesses are more motivated to implement these practices. Furthermore, as well-implemented supply chain management contributes to better business environmental performance, organizations keen on environmental sustainability are inclined to adopt sustainable and green supply chain management practices. A similar logical interplay can be observed for business social sustainability. Moreover, the dependent variables discussed in this study and those in other papers can also have a cyclical relationship. That is, businesses that achieve economic sustainability are inherently positioned to invest more in the social and environmental sustainability parameters. Likewise, businesses excelling in environmental and social sustainability performance anticipate better economic outcomes due to the efficiencies and reputational advantages they gain from their commitment to environmental and social sustainability.

In short, the connections between supply chain management practices and business sustainability performance are highly intricate. While various studies, including the one at hand, have explored different aspects of this topic, a compelling need remains for a comprehensive and multifaceted examination of this study area.

5. Conclusions and Recommendations

5.1. Conclusions

This study examined the impact of supply chain management practices (SCMPs) on business sustainability, considering economic, environmental, and social dimensions. The findings show a statistically significant relationship between SCMPs and business sustainability performance. The key conclusions are as follows:

Economic Sustainability: Supply chain internal practices ($\beta = 0.464$, $p < 0.001$), integration with customers ($\beta = 0.40$, $p < 0.001$), and integration with suppliers ($\beta = 0.195$, $p < 0.002$) were found to influence business economic sustainability significantly. Among these, internal supply chain management practices had the most significant impact, highlighting the importance of optimizing internal supply chain operations to drive economic sustainability.

Environmental Sustainability: Integration with customers ($\beta = 0.484$, $p < 0.001$) and suppliers ($\beta = 0.372$, $p < 0.001$) showed significant effects on environmental sustainability. However, supply chain internal practices did not demonstrate a statistically significant impact, suggesting the need for more substantial organizational commitment to green initiatives for internal practices to yield measurable environmental benefits.

Social Sustainability: Customer integration ($\beta = 0.722$, $p < 0.001$), supplier integration ($\beta = 0.203$, $p < 0.001$), and internal practices ($\beta = 0.134$, $p < 0.001$) significantly impacted social sustainability performance, with customer integration being the most influential. These findings underscore the importance of collaborative efforts with external stakeholders, alongside robust internal strategies, to achieve social sustainability goals.

This study's findings align with much of the existing literature, including works on green supply chain management (GSCM), sustainable supply chain management (SSCM), and lean and agile supply chains, which emphasize the pivotal role of SCMPs in driving business sustainability. However, this research also highlights discrepancies in the literature regarding the extent to which SCMPs impact the three dimensions of sustainability, particularly economic and environmental outcomes.

In summary, this study confirms the crucial role of SCMPs in enhancing business sustainability across economic, environmental, and social dimensions. However, it also underscores these relationships' complex and context-specific nature, highlighting the need for further research to address existing inconsistencies and provide a deeper understanding of these dynamics in varied industries and regions.

5.2. Recommendations

Based on the findings of this study and the reviewed literature, businesses should prioritize customer and supplier integration, as these practices significantly influence all dimensions of sustainability. Strengthening internal supply chain practices is also crucial for economic sustainability and requires embedding efficiency and sustainability principles into operations. Companies should invest in green initiatives, such as renewable energy adoption and waste reduction, to improve environmental outcomes while tailoring strategies to their industry and regional context. Furthermore, businesses should promote social responsibility by ensuring ethical labor practices, improving workforce conditions, and engaging in community development. Additionally, managers should tailor their strategies to their specific industry, region, and organizational structure, recognizing that the effectiveness of supply chain management practices (SCMPs) varies based on these contextual

factors. By aligning supply chain management practices with sustainability objectives and organizational goals, businesses can maximize their sustainability performance across all dimensions while addressing the challenges of today's competitive landscape.

5.3. Limitations of the Study and Direction for Future Research

This study explores how supply chain management practices influence the sustainability performance of water bottling companies in and around Finfinnee/Addis Ababa, Ethiopia. It examines supply chain internal practices, integration with suppliers, and integration with customers in relation to business sustainability. One limitation of this study is that it uses questionnaires for dependent and independent variables and multiple regression for data analysis, which could introduce response bias and challenge the establishment of a conclusive causal relationship. Moreover, this study did not include external economic, political, and environmental factors that could affect business sustainability performances. To mitigate the first limitation, various techniques were employed, including designing the questionnaire carefully and validating it as well as the authors' direct engagement in the data collection process to establish trust, elucidate survey instructions, and ensure data privacy and academic integrity, ensuring a diverse research sample, supplementing questionnaire data with interviews of section head managers, observing some relevant parameters (e.g., greening efforts, public projects), and ensuring model robustness through diverse mode diagnosis tests and sensitivity analysis. The second limitation can be handled by further study. To this end, future research should address inconsistencies in the literature regarding the relationship between SCMP and business sustainability. Studies could explore cross-industry analyses to identify best practices specific to different sectors, investigate the impact of regional and cultural variations on SCMP effectiveness, and examine the role of Industry 4.0 and emerging technologies, such as blockchain and artificial intelligence, in enhancing sustainability performance. These efforts will provide a deeper and more comprehensive understanding of the relationship between SCMP and business sustainability dynamics across diverse contexts.

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Appendix A. Data Collection Checklist

For the following questions, please give a score "1 to 5" according to scales from "strongly disagree" to "strongly agree": "1" means that you strongly disagree with the

item's description; "2" means that you disagree with the item's description; "3" means that you somewhat agree with the item's description; "4" means that you agree with the item's description; and "5" means that you strongly agree with the item's description.

A	**Supply Chain Internal Practices (SCIP)**	**Your Level of Agreement with the Statement**				
		1	2	3	4	5
1	Our Company has an effective product and material planning and scheduling system.					
2	Our Company has an effective and transparent bedding system for materials purchase.					
3	Our Company has an effective material quality inspection and control system.					
4	Our Company has an effective inventory management system.					
5	Our Company has an internally integrated logistics system among organization units (transportation, materials management, production, finance, and HR)					
6	Our Company effectively reduces process setup time and costs					
7	Our Company has integrated internal functions relevant to the supply chain (there exist- cross-functional work teams, process orientation, mutual understanding, sharing of information and resources, and cooperation among the Manufacturing, Marketing, Finance, general service, Purchasing, and other departments).					
B	**Integration with Suppliers (IWS)**					
1	Our Company has informal partnerships with suppliers.					
2	Our Company has a written contractual/formal agreement with suppliers.					
3	Our Company is dependent on few dependable/trustable suppliers.					
4	Our Company has a long-term relationship with suppliers.					
5	Our Company has a joint investment with suppliers to solve problems, including conflict resolutions.					
6	Our Company adheres to the principle of mutual trust and fairness in dealings with suppliers and shares business information (manufacturing and other) with them.					
7	Our Company includes issues related to suppliers in planning and goal setting.					
C	**Integrations with Customers (IWC)**	**Your Level of Agreement with the Statement**				
		1	2	3	4	5
1	Our Company frequently evaluates customer satisfaction.					
2	Our Company follows Quality feedback from customers;					
3	Our Company assesses and knows the future expectations of customers and has a system of communication with individual customers.					
4	Our Company involves customers' ideas in the development of new products.					
5	Our Company responds to changes in market demand quickly.					
6	Our Company effectively reduces process setup time and costs.					

7	Our Company has integrated internal functions relevant to the supply chain (there exist- cross-functional work teams, process orientation, mutual understanding, sharing of information and resources, and cooperation among the Manufacturing, Marketing, Finance, general service, Purchasing, and other departments).					
D	**Business Economic Sustainability Performance (BEconSP)**					
1	Our Company's revenue is increasing over the past few years.					
2	Our Company maintains positive cash flow consistently.					
3	Our Company engages in ongoing cost reduction and process improvement initiatives.					
4	Our Company has gained more market share over time.					
5	Our Company is investing in and adapting to technological changes in the industry.					
6	Our Company has a business growth strategy for the next few years.					
7	Our Company's profit has been increasing over the past few years.					
E	**Business Environmental Sustainability Performance (BEnvSP)**					
1	Energy consumption: Our company is tracking and reducing energy consumption (using energy-efficient equipment and renewable energy sources, e.g., solar energy and energy audits).					
2	Greenhouse Gas Emissions: Our Company measures and reduces greenhouse gas emissions.					
3	Waste Generation and Management: Our Company is assessing the quantity and type of waste generated by our organization and has a strategy for waste diversion and recycling					
4	Greening and Biodiversity Conservation Initiatives: Our Company works to protect and promote biodiversity. (e.g., participating in greening initiatives and financially supporting greening initiatives).					
5	Resource Efficiency: Our Company is assessing resource use efficiency, including the underground water we use and other raw materials, in production processes to reduce waste and environmental impact.					
6	Environmental Compliance: Our Company works to ensure compliance with environmental laws and regulations.					
7	Community and Stakeholder Engagement: Our Company engages with and responds to the local community's and stakeholders' concerns regarding environmental sustainability.					
F	**Business Social Sustainability Performances (BSSP)**	**Your Level of Agreement with the Statement**				
		1	2	3	4	5
1	Our Company has clear policies and initiatives to promote diversity and inclusion.					
2	Our Company has a code of social responsibility statement.					

3	Our Company has programs in place to support employee well-being.
4	Our Company offer opportunities for employee development and growth.
5	Our Company has a well-established community engagement programs.
6	Our Company has a dedicated budget and resources for community support.
7	Our Company monitors and audits its supply chain for ethical/social responsibility practices

Appendix B. Results of Sensitivity Analysis

Bootstrap Specifications		
Sampling Method	Simple	
Number of Samples		1000
Confidence Interval Level		95.0%
Confidence Interval Type	Percentile	

Regression

Variables Entered/Removed [a]			
Model	**Variables Entered**	**Variables Removed**	**Method**
1	Integration with Customers (IWC), Supply Chain Internal Practice (SCIP), Integration with Suppliers (IWS) [b]		Enter

[a]. Dependent Variable: Business Economic Performance (BEconSP); [b]. All requested variables entered.

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	0.879 [a]	0.773	0.767	0.24983

[a]. Predictors: (Constant), Integration with Customers (IWC), Supply Chain Internal Practice (SCIP), Integration with Suppliers (IWS).

ANOVA [a]						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	22.938	3	7.646	122.502	<0.001 [b]
	Residual	6.741	108	0.062		
	Total	29.679	111			

[a]. Dependent Variable: Business Economic Performance (BEconSP); [b]. Predictors: (Constant), Integration with Customers (IWC), Supply Chain Internal Practice (SCIP), Integration with Suppliers (IWS).

Coefficients [a]						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	**Std. Error**	**Beta**		
1	(Constant)	0.212	0.193		1.100	0.274
	Supply Chain Internal Practice (SCIP)	0.437	0.055	0.464	7.946	<0.001
	Integration with Suppliers (IWS)	0.185	0.060	0.195	3.100	0.002
	Integration with Customers (IWC)	0.318	0.060	0.400	5.300	<0.001

[a]. Dependent Variable: Business Economic Performance (BEconSP).

Bootstrap for Coefficients							
Model		**B**	**Bootstrap** [a]				
			Bias	**Std. Error**	**Sig. (2-Tailed)**	**95% Confidence Interval**	
						Lower	**Upper**
1	(Constant)	0.212	0.010	0.272	0.455	−0.249	0.801
	Supply Chain Internal Practice (SCIP)	0.437	−0.003	0.060	<0.001	0.305	0.545
	Integration with Suppliers (IWS)	0.185	−0.001	0.040	0.002	0.100	0.256
	Integration with Customers (IWC)	0.318	0.001	0.061	<0.001	0.194	0.438

[a]. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples.

Bootstrap Specifications	
Sampling Method	Simple
Number of Samples	1000
Confidence Interval Level	95.0%
Confidence Interval Type	Percentile

Variables Entered/Removed [a]			
Model	**Variables Entered**	**Variables Removed**	**Method**
1	Integration with Customers (IWC), Supply Chain Internal Practice (SCIP), Integration with Suppliers (IWS) [b]		Enter

[a]. Dependent Variable: Business Environmental Performance (BEnvSP); [b]. All requested variables entered.

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	0.747 [a]	0.558	0.545	0.37383

[a]. Predictors: (Constant), Integration with Customers (IWC), Supply Chain Internal Practice (SCIP), Integration with Suppliers (IWS).

ANOVA [a]						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	19.020	3	6.340	45.368	<0.001 [b]
	Residual	15.093	108	0.140		
	Total	34.113	111			

[a]. Dependent Variable: Business Environmental Performance (BEnvSP); [b]. Predictors: (Constant), Integration with Customers (IWC), Supply Chain Internal Practice (SCIP), Integration with Suppliers (IWS).

Coefficients [a]						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	**Std. Error**	**Beta**		
1	(Constant)	1.003	0.289		3.476	<0.001
	Supply Chain Internal Practice (SCIP)	−0.080	0.082	−0.079	−0.970	0.334
	Integration with Suppliers (IWS)	0.379	0.089	0.372	4.233	<0.001
	Integration with Customers (IWC)	0.413	0.090	0.484	4.602	<0.001

[a]. Dependent Variable: Business Environmental Performance (BEnvSP).

Bootstrap for Coefficients							
Model		**B**	**Bootstrap** [a]				
			Bias	**Std. Error**	**Sig. (2-Tailed)**	**95% Confidence Interval**	
						Lower	**Upper**
1	(Constant)	1.003	−0.011	0.368	0.006	0.264	1.721
	Supply Chain Internal Practice (SCIP)	−0.080	0.003	0.074	0.286	−0.216	0.069
	Integration with Suppliers (IWS)	0.379	0.007	0.088	<0.001	0.221	0.560
	Integration with Customers (IWC)	0.413	−0.006	0.080	<0.001	0.252	0.563

[a]. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples.

Bootstrap Specifications	
Sampling Method	Simple
Number of Samples	1000
Confidence Interval Level	95.0%
Confidence Interval Type	Percentile

Regression

Variables Entered/Removed [a]			
Model	**Variables Entered**	**Variables Removed**	**Method**
1	Integration with Customers (IWC), Supply Chain Internal Practice (SCIP), Integration with Suppliers (IWS) [b]		Enter

[a]. Dependent Variable: Business Social Performance (BSSP); [b]. All requested variables entered.

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	0.947 [a]	0.897	0.894	0.17221

[a]. Predictors: (Constant), Integration with Customers (IWC), Supply Chain Internal Practice (SCIP), Integration with Suppliers (IWS).

ANOVA [a]						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	27.985	3	9.328	314.545	<0.001 [b]
	Residual	3.203	108	0.030		
	Total	31.188	111			

[a]. Dependent Variable: Business Social Performance (BSSP); [b]. Predictors: (Constant), Integration with Customers (IWC), Supply Chain Internal Practice (SCIP), Integration with Suppliers (IWS).

Coefficients [a]						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	**Std. Error**	**Beta**		
1	(Constant)	0.391	0.133		2.941	0.004
	Supply Chain Internal Practice (SCIP)	0.129	0.038	0.134	3.407	<0.001
	Integration with Suppliers (IWS)	0.198	0.041	0.203	4.797	<0.001
	Integration with Customers (IWC)	0.588	0.041	0.722	14.233	<0.001

[a]. Dependent Variable: Business Social Performance (BSSP).

Bootstrap for Coefficients							
Model		B	Bootstrap [a]				
			Bias	Std. Error	Sig. (2-Tailed)	95% Confidence Interval	
						Lower	Upper
1	(Constant)	0.391	−0.005	0.126	0.002	0.123	0.631
	Supply Chain Internal Practice (SCIP)	0.129	0.002	0.036	<0.001	0.057	0.202
	Integration with Suppliers (IWS)	0.198	0.001	0.034	<0.001	0.126	0.261
	Integration with Customers (IWC)	0.588	−0.001	0.034	<0.001	0.519	0.661

[a]. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples.

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