



## The Impact of Sustainable Supply Chain on Achieving Excellence in the Egyptian Hotel Industry

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### ABSTRACT

This study examines the impact of sustainable supply chain management on achieving supply chain excellence in the five-star hotel industry in Greater Cairo, Egypt. The study integrates the principles of sustainability into supply chain operations to enhance efficiency, customer satisfaction, and competitiveness. Drawing on the resource-based view theory, the study develops a theoretical framework linking sustainability and supply chain excellence. A quantitative methodology was employed, with structural equation modeling conducted through WarpPLS software. Data was collected via a survey administered to a sample of 403 hotel managers and employees involved in supply chain operations. The analysis revealed that sustainable supply chain practices significantly improve operational efficiency, customer satisfaction, and risk management. The structural model demonstrated strong explanatory power ( $R^2 = 0.91$ ), with statistically significant path coefficients supporting the proposed relationships. This study provides specific strategic recommendations, such as investing in smart supply chain technologies, strengthening local supplier networks, and incorporating sustainability metrics into hotel performance evaluations. Furthermore, future research directions include examining the moderating role of cultural factors, assessing the impact of sustainability certifications, and exploring the financial returns (e.g., return on investment) associated with sustainable supply chain management practices in emerging economies.

### KEYWORDS

Sustainability, sustainable supply chain, excellence, hotel industry.

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## تأثير سلسلة التوريد المستدامة على تحقيق التميز في قطاع الفنادق المصرية

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### الملخص

تبحث هذه الدراسة في تأثير إدارة سلسلة التوريد المستدامة على تحقيق التميز في سلسلة التوريد في قطاع الفنادق ذات الخمس نجوم في قطاع القاهرة الكبرى، مصر. تدمج الدراسة مبادئ الاستدامة في عمليات سلسلة التوريد لتعزيز الكفاءة والقدرة التنافسية. واستنادًا إلى نظرية الرؤية القائمة على الموارد، تطور الدراسة إطارًا نظريًا يربط بين الاستدامة والتميز في سلاسل التوريد الفندقية. وتستخدم الدراسة منهجية كمية، مع نمذجة المعادلات الهيكلية التي أجريت باستخدام برنامج WarpPLS. جُمعت البيانات من خلال استطلاع أجري على عينة من 403 من مديري الفنادق والموظفين المشاركين في عمليات سلسلة التوريد. كشف التحليل أن ممارسات سلسلة التوريد المستدامة تحسّن بشكل كبير من الكفاءة التشغيلية ورضا العملاء وإدارة المخاطر. أظهر النموذج الهيكلي قوة تفسيرية قوية ( $R^2 = 0.91$ )، مع معاملات مسار ذات دلالة إحصائية تدعم العلاقات المقترحة. تُقدم هذه الدراسة توصيات استراتيجية محددة، مثل الاستثمار في تقنيات سلسلة التوريد الذكية، وتعزيز شبكات الموردين المحليين، ودمج مقاييس الاستدامة في تقييمات أداء الفنادق. علاوةً على ذلك، تشمل توجهات البحث المستقبلية دراسة الدور المُخفف للعوامل الثقافية، وتقييم أثر شهادات الاستدامة، واستكشاف العوائد المالية (مثل عائد الاستثمار) المرتبطة بممارسات إدارة سلسلة التوريد المستدامة في الاقتصادات الناشئة.

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### الكلمات الدالة

الاستدامة، سلسلة التوريد المستدامة، التميز، صناعة الفنادق.

## 1.Introduction

The hospitality industry, especially the hotel sector, operates in a fast-paced and competitive landscape that demands efficient and adaptable supply chain management to achieve operational excellence, service quality, and cost-effectiveness (Dolgui et al., 2020). Unlike manufacturing supply chains, hotel supply chains are intricate, service-oriented, and require strong coordination among various stakeholders, such as suppliers, distributors, logistics providers, and customers (Paulraj et al., 2017). Thus, understanding the specific context of supply chain management in hotels is essential to address their unique operational challenges. However, hotel supply chains face increasing challenges due to evolving market demands, fluctuating consumer preferences, and environmental pressures. The effectiveness of hotel supply chain operations significantly influences guest satisfaction, operational performance, and profitability (Choi et al., 2018). As such, maintaining supply chain excellence has become a pressing necessity for hotels striving to enhance their competitiveness and resilience.

One of the critical priorities that has emerged is the integration of sustainability into supply chain operations. Efficiency, while fundamental, is no longer sufficient on its own. Efficiency involves optimizing procurement, logistics, inventory management, and supplier collaboration to reduce costs and enhance service delivery (Jones & Hillier, 2021). Yet, global challenges like climate change and regulatory pressures have heightened the importance of embedding sustainable practices within supply chains (Ivanov et al., 2021). Sustainability in hotel supply chains emphasizes environmentally and socially responsible measures, in the hotel sector, especially in regions like Egypt, there has been increasing emphasis on integrating sustainable procurement and eco-friendly practices to meet both regulatory expectations and customer demands (Kamble et al., 2020). Such as sourcing eco-friendly products, minimizing waste, lowering carbon emissions, and ensuring ethical labor standards (Govindan et al., 2015). Green supply chain management in hotels encourages reducing resource consumption, optimizing transportation, and supporting the circular economy (Geissdoerfer et al., 2017). For instance, many hotels now collaborate with local suppliers, adopt energy-efficient technologies, and implement robust waste management programs (Zhu et al., 2018).

Despite the increasing emphasis on sustainable practices, there remains a gap in the existing literature concerning how sustainability can be systematically integrated to achieve supply chain excellence in hotels (Fiksel, 2006; Govindan et al., 2015). While prior research has explored individual aspects of green practices, a comprehensive understanding of sustainability as a core driver of supply chain excellence in the hotel sector is still lacking (Ham et al., 2020; Negri et al., 2021). Addressing this gap is critical, given the escalating consumer expectations and the industry's move toward greater environmental accountability. Therefore, this study aims to examine the core dimensions of supply chain excellence in hotels, with a particular focus on the role of sustainability. It seeks to identify the best practices, challenges, and opportunities for hotels striving to align operational efficiency with sustainable development goals, thereby contributing both to theoretical knowledge and practical advancements in hotel supply chain management.

## **2. Literature Review**

### **2.1 Supply Chain Excellence**

Supply chain management in the hotel industry is characterized by the coordination of various activities such as procurement, logistics, food and beverage supply, housekeeping inventory, and facility management (Jawabreh et al., 2013). Unlike manufacturing supply chains, hotel supply chains must manage perishable goods, seasonal demand fluctuations, and service-based interactions. Effective supply chain management in hotels ensures service consistency, cost control, supplier reliability, and guest satisfaction. Hotels must balance efficiency with flexibility, ensuring that supply chains can adapt quickly to dynamic customer needs while maintaining quality and sustainability standards (Arifin et al., 2019).

Supply chain excellence is the strategic optimization of supply chain operations to ensure efficiency, responsiveness, customer satisfaction, and resilience (Al-Husain et al., 2024; Elshaer et al., 2024). It encompasses an organization's ability to coordinate various supply chain functions, including procurement, production, distribution, and logistics, while aligning these activities with corporate objectives. Achieving supply chain excellence requires businesses to adopt proactive strategies, leverage technological advancements, foster collaboration, and continuously evaluate performance to maintain competitive advantages (Lee et al., 2022). In industries such as hospitality, retail, and manufacturing, supply chain excellence is essential for enhancing service delivery, cost efficiency, and market responsiveness. Key performance indicators, such as order reliability, inventory turnover, and customer fulfillment rates, help organizations measure their supply chain effectiveness (Bottani & Bigliardi, 2014). Businesses that integrate advanced data analytics, predictive modeling, and automation into their supply chain operations can anticipate disruptions, optimize inventory management, and improve order fulfillment accuracy, leading to a streamlined supply network (Kurdi et al., 2023).

Operational efficiency in supply chain management involves optimizing resources, reducing waste, and improving productivity while maintaining high service quality. Lean methodologies such as just-in-time, six sigma, and total quality management contribute significantly to operational efficiency by minimizing excess inventory, reducing defects, and ensuring continuous improvement in supply chain processes (Reid & Sanders, 2016). The successful implementation of these frameworks enables organizations to enhance their responsiveness to customer demands and market fluctuations while maintaining cost-effectiveness (Eckes, 2001).

Supply chain excellence also involves dynamic process optimization, where businesses implement smart logistics solutions, warehouse automation, and route optimization tools to improve supply chain visibility and efficiency. The integration of artificial intelligence and machine learning enables organizations to analyze real-time data and make data-driven decisions, reducing errors and increasing supply chain agility (Mobarak et al., 2023).

Collaboration across supply chain networks strengthens partnerships between suppliers, manufacturers, and distributors, creating synergies that enhance supply chain resilience. Effective collaboration ensures transparent communication, synchronized decision-making, and collective problem-solving, allowing businesses to

mitigate risks and respond swiftly to disruptions (Soosay & Hyland, 2015; Elshaer et al., 2023). Supplier relationship management plays a critical role in fostering trust and long-term cooperation, ensuring that supply chain partners align their objectives for mutual benefit (Fan & Stevenson, 2018).

Risk management in supply chain excellence involves identifying potential vulnerabilities, assessing their impact, and implementing mitigation strategies. Organizations must develop contingency plans, establish diversified supplier networks, and utilize real-time monitoring systems to track potential disruptions. Strategies such as supplier diversification, predictive risk analytics, and digital risk monitoring enable companies to maintain operational stability and prevent disruptions from escalating into major crises (Fan & Stevenson, 2018).

The role of technology in supply chain excellence is indispensable, as digital transformation continues to revolutionize logistics, inventory management, and distribution networks. Businesses that integrate enterprise resource planning systems, blockchain technology, cloud computing, and the Internet of Things (IoT) enhance supply chain transparency, traceability, and security (Niu et al., 2021). These technologies enable real-time tracking of goods, automated inventory replenishment, and predictive demand forecasting, ensuring greater efficiency and cost savings. Additionally, robotics and automation in warehouses streamline operations by reducing manual labor, accelerating order processing, and minimizing errors. Automated guided vehicles and robotic process automation further optimize logistics operations, reducing delivery lead times and improving supply chain reliability (Mobarak et al., 2023).

A customer-driven approach to supply chain management ensures that supply chain strategies align with evolving consumer demands. Businesses must adopt personalized supply chain solutions, leveraging customer analytics and behavioral insights to tailor their offerings. Mass customization, demand-driven replenishment, and omnichannel distribution models enhance service responsiveness and customer satisfaction (Reichhart & Holweg, 2007). By continuously innovating and integrating sustainability principles into their supply chain operations, organizations can achieve long-term supply chain excellence. Proactive risk mitigation, technological adoption, and collaborative networks contribute to a resilient and adaptable supply chain that thrives in an increasingly dynamic business environment (Ammar et al., 2024).

## **2.2 Sustainable Supply Chain**

In the hospitality industry, sustainable supply chain management faces unique challenges such as perishability of goods, service co-production, and the need for rapid response to guest demands (Choi et al., 2018; Kamble et al., 2020). These complexities necessitate customized sustainability strategies distinct from those in the manufacturing sectors. Sustainable supply chain management integrates economic, environmental, and social considerations into supply chain operations to minimize negative impacts and maximize long-term value creation. It emphasizes responsible resource utilization, ethical sourcing, and corporate social responsibility (Saber et al., 2019). Organizations that implement sustainable supply chain practices enhance their corporate reputation, reduce operational risks, and contribute to economic, social, and environmental sustainability (Cao et al., 2023).

Environmental sustainability in supply chains involves reducing carbon footprints, optimizing energy consumption, and implementing eco-friendly practices. Organizations must adopt green procurement strategies by sourcing sustainable materials, reducing packaging waste, and implementing circular economy principles. For instance, the hospitality industry integrates energy-efficient lighting, biodegradable packaging, and water conservation systems to minimize its environmental impact (Xu & Gursoy, 2015). Pollution control initiatives such as carbon offset programs, waste reduction strategies, and sustainable logistics practices help businesses lower their ecological footprint. Companies must also invest in renewable energy sources, such as solar and wind power, to transition towards more sustainable supply chain operations (Schwartz et al., 2008).

The social dimension of sustainable supply chain management focuses on ethical labor standards, fair wages, safe working conditions, and community engagement. Organizations must establish fair trade practices and ensure that their supply chains uphold human rights and labor laws. Employee training programs, career development opportunities, and workplace inclusive initiatives enhance workforce productivity and retention (Costen & Salazar, 2011). Community involvement plays a critical role in sustainable supply chains. Businesses that engage in corporate social responsibility initiatives, such as supporting local suppliers, investing in education, and funding social welfare projects, contribute positively to society while strengthening their brand reputation (Font et al., 2008).

Economic sustainability ensures that supply chain operations remain profitable while adhering to responsible business practices. Sustainable cost management strategies, including energy efficiency programs, inventory optimization, and waste reduction initiatives, contribute to financial stability and long-term growth (Goodman, 2000). Organizations that integrate digital supply chain technologies, such as artificial intelligence driven analytics and smart logistics platforms, can enhance efficiency while reducing operational expenses (Enz & Siguaw, 1999). Additionally, sustainable branding and eco-friendly marketing strategies help businesses attract environmentally conscious consumers, increasing customer loyalty and market share. The demand for sustainable products continues to grow, making sustainability a key driver of competitive advantage in global supply chains (Kleindorfer et al., 2005).

Despite its advantages, implementing sustainable supply chain management presents several challenges. Organizations must balance economic objectives with environmental and social responsibilities while complying with stringent regulatory frameworks (Preuss, 2005). Achieving sustainability requires businesses to conduct life cycle assessments, optimize supplier selection, and invest in transparency-enhancing technologies such as blockchain and IoT (Ding, 2018). Sustainable supply chain strategies must also address supply chain risks, including resource scarcity, geopolitical tensions, and environmental disruptions. Organizations that develop adaptive strategies, such as circular supply chain models, carbon-neutral logistics, and resilient sourcing networks, can mitigate risks while ensuring sustainability compliance (Adegoke et al., 2021).

In conclusion, sustainable supply chain management represents a strategic initiative that aligns economic growth with environmental stewardship and social responsibility.

By integrating sustainability principles into supply chain operations, businesses can enhance resilience, improve brand reputation, and secure long-term success in a rapidly evolving global marketplace (Baah & Jin, 2019).

The resource-based view theory posits that sustainable competitive advantage is achieved by developing unique internal resources that are valuable, rare, inimitable, and non-substitutable. In the context of hotel supply chains, integrating sustainability initiatives can be seen as a strategic resource that enhances operational capabilities, stakeholder relationships, and market positioning. By embedding environmental, social, and economic sustainability into supply chain practices, hotels can build resilient and differentiated supply networks that contribute to long-term excellence and competitiveness (Jafari & Rezaee, 2014).

Based on the reviewed literature, the following hypotheses can be formulated:

*H1: Sustainable Supply Chain has a significant positive effect on Supply Chain Excellence.*

*H2: There is a significant difference among respondents' perception of supply chain excellence with regard to their demographic data (gender, age, education, occupation and work experience).*

*H3: There is a significant difference among respondents' perception of sustainability with regard to their demographic data (gender, age, education, occupation and work experience).*

### **3. METHODOLOGY**

#### **3.1 Participants**

The study focuses on employees and managers working in five-star hotels in Greater Cairo, particularly those involved in supply chain management, procurement, logistics, and operations. According to the latest available data from Booking.com (2024), there are approximately 28 five-star hotels operating in Cairo Governorate. This figure includes hotels located within the Greater Cairo area, which consists of Cairo, Giza, and parts of Qalyubia. Given the impracticality of surveying the entire population, a convenience sampling method was employed. This approach enables efficient data collection by selecting participants who are readily accessible. While convenience sampling provides practical advantages, it also introduces limitations such as potential biases and limited generalizability. However, it is considered appropriate given the study's constraints and exploratory nature.

Prior to conducting the main study, an exploratory survey was conducted with a small sample of hotel employees (n=30) to assess the clarity, relevance, and comprehensiveness of the questionnaire items. Feedback from the exploratory study was used to refine and improve the questionnaire before distributing it widely. Academic colleagues and supervisors reviewed the instrument to ensure clarity and relevance. The feedback led to necessary modifications, enhancing the questionnaire's reliability and validity. After finalizing the instrument, data was collected through an online survey distributed to hotel managers and employees. A total of 450 questionnaires were disseminated electronically, with assurances of confidentiality and voluntary participation. Out of the distributed surveys, 403 were completed and

returned, yielding a response rate of 89.5%, which significantly strengthens the study's credibility.

Greater Cairo was selected due to its high concentration of five-star hotels and its significance as a major tourism hub in Egypt (Abdel Majeed et al., 2025; Ibrahim et al., 2025). Focusing on five-star hotels allows for the examination of supply chain practices in establishments with advanced operational structures, where sustainability initiatives are more likely to be implemented and have significant impact. The study was conducted between January 2024 to March 2024. The data were collected during this period, focusing exclusively on five- stars hotels operating in greater Cairo.

### 3.2 Instrument

The questionnaire used in this study consisted of multiple sections to measure key constructs related to supply chain excellence and sustainability within the hotel industry. (1) Demographic Information: This section included questions regarding gender, age, education, occupation, and years of experience. (2) Supply Chain Excellence: Measured through four dimensions—operational efficiency, technological integration, collaboration and risk management, and customer focus. (3) Sustainability: Assessed across three dimensions—environmental sustainability (waste reduction, energy efficiency, eco-friendly procurement), social sustainability (employee welfare, ethical labor practices, community engagement), and economic sustainability (cost-efficiency, revenue growth, financial risk management). A five-point Likert scale was used for responses, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). This scale is widely used to assess perceptions and attitudes effectively.

To ensure the reliability and validity of the constructs, statistical tests were conducted. Cronbach's alpha values exceeded 0.70, confirming internal consistency. Composite Reliability values were above 0.80, indicating strong reliability, while the Average Variance Extracted (AVE) exceeded 0.50, demonstrating adequate convergent validity. Discriminant validity was confirmed using the Fornell-Larcker criterion. WarpPLS was selected due to its ability to handle small to medium sample sizes, its robustness against non-normal data distributions, and its advanced capabilities for assessing model fit indices (Kock, 2025). While convenience sampling allowed for practical data collection, it may limit external validity and generalizability.

### 3.3 Data analysis

Data analysis was conducted using SPSS V.22 and Warp PLS to test hypotheses and examine relationships between study variables. The process included:

- **Descriptive Statistics:** Examining demographic data and calculating distribution measures (mean, standard deviation) for study variables.
- **Model Fit Metrics:** Assessing the structural equation model's quality using key indicators such as APC, R-squared values, and collinearity diagnostics.
- **Reliability and Validity Tests:** Using Cronbach's alpha, Composite Reliability, and Confirmatory Factor Analysis to validate measurement scales.
- **Structural Equation Modeling:** Evaluating relationships between supply chain excellence and sustainability using path analysis.

- **Demographic Analysis:** Applying non-parametric tests (Mann-Whitney U test, Kruskal-Wallis test) to explore demographic differences in perceptions.

## 4. Findings

### 4.1 Demographic Information

The study sample demonstrates a nearly equal gender split, with male respondents slightly outnumbering females (52.1%, n=210 versus 47.9%, n=193). This balanced representation helps mitigate potential gender biases in the collected data, ensuring diverse viewpoints are captured as present in Table (1). Age demographics reveal a concentration among younger participants, with the largest cohort being 25-34 years old (26.8%, n=108). Close behind are those under 25 (23.6%, n=95) and 35–44-year-olds (22.8%, n=92). The 45-54 age group comprises 21.8% (n=88), while only 5.0% (n=20) are over 55. This age distribution indicates the findings predominantly reflect the views of early and mid-career professionals.

Moreover, educational backgrounds show a predominance of bachelor's degree holders (68.7%, n=277), suggesting a highly educated respondent pool. Advanced degree holders include 9.9% (n=40) with master's degrees and 7.9% (n=32) with doctorates. High school graduates represent 9.2% (n=37), while 4.2% (n=17) reported other educational qualifications. The sample's strong academic credentials imply participants possess the knowledge base to provide meaningful responses. Occupational roles present a cross-section of organizational hierarchies. Non-management staff constitute the largest group (29.5%, n=119), with equal proportions in middle management and supervisory roles (26.8% each, n=108). Senior executives account for 16.9% (n=68). This distribution enables multi-level organizational perspectives in the analysis. Also, professional experience data shows most respondents are seasoned professionals, with 42.7% (n=172) having over a decade of experience. Those with 8-10 years' experience comprise 23.8% (n=96), while 18.1% (n=73) have 1-3 years. Less experienced groups include those under one year (8.4%, n=34) and 4-7 years (6.9%, n=28). The substantial representation of experienced professionals lends credibility to the study's findings through practice-based insights.

Table (1) Demographic Information

Demographics	Freq.	%
<b>Gender</b>		
Male	210	52.1
Female	193	47.9
<b>Age</b>		
Less than 25 years	95	23.6
25 - less than 35 years	108	26.8
35 - less than 45 years	92	22.8
45 - less than 55 years	88	21.8
More than 55 years	20	5.0
<b>Education</b>		
High school	37	9.2
Bachelor's degree	277	68.7
Master's degree	40	9.9
Doctoral Degree	32	7.9

<b>Demographics</b>	<b>Freq.</b>	<b>%</b>
Other	17	4.2
<b>Occupation</b>		
Top management	68	16.9
Middle management level	108	26.8
Supervisory level	108	26.8
Non-management level	119	29.5
<b>Years of Experience</b>		
Less than 1 year	34	8.4
1-3 years	73	18.1
4-7 years	28	6.9
8-10 years	96	23.8
More than 10 years	172	42.7
<b>Total</b>	<b>403</b>	<b>100</b>

## 4.2 Descriptive Statistics

### 4.2.1 Supply Chain Excellence

Table (2) present the descriptive statistics on supply chain excellence reveal key dimensions such as operational efficiency, technological integration, collaboration and risk management, and customer focus. With an overall mean score of 4.15 (SD = 0.606), supply chain excellence is marked by strong performance across these dimensions.

Table (2) Descriptive Statistics for Supply Chain Excellence

		<b>Mean</b>	<b>SD</b>	<b>Rank</b>
<b>Supply Chain Excellence</b>		<b>4.15</b>	<b>.606</b>	
<b>1.a Operational Efficiency</b>		<b>4.04</b>	<b>.669</b>	
1	The supply chain ensures timely and accurate delivery of orders in full compliance with customer requirements.	4.30	.931	<b>4</b>
2	Continuous process improvement practices are implemented to enhance operational efficiency and minimize waste.	3.94	.720	
3	Automation and robotics are utilized to improve operational accuracy and reduce manual errors in supply chain activities.	3.78	.676	
4	Advanced demand forecasting techniques are used to ensure optimal inventory levels.	4.31	.965	
5	The supply chain leverages predictive analytics to identify potential bottlenecks and streamline operations	3.86	.807	
<b>1.b Technological Integration</b>		<b>4.13</b>	<b>.688</b>	
6	The supply chain adopts advanced technologies such as IoT and artificial intelligence to enhance visibility and responsiveness.	3.98	.764	<b>3</b>
7	Real-time monitoring systems are implemented to improve supply chain decision-making.	4.38	.868	
8	Integrated data systems are utilized to unify information from multiple sources, providing a	3.98	.794	

	comprehensive view of the supply chain.			
9	The organization uses smart technologies to reduce costs and improve the overall efficiency of supply chain operations.	3.90	.771	
10	Predictive analytics tools are applied to optimize supply chain performance and mitigate risks.	4.40	.908	
<b>1.c Collaboration and Risk Management</b>		<b>4.20</b>	<b>.612</b>	
11	Effective collaboration exists between suppliers, manufacturers, and distributors to achieve shared goals.	3.93	.779	
12	The supply chain applies robust risk management strategies to minimize the impact of potential disruptions.	4.42	.872	
13	Strategic partnerships with suppliers are developed to ensure consistency and reliability in supply chain activities.	4.55	.778	<b>2</b>
14	The supply chain quickly adapts to unforeseen disruptions through flexible planning and proactive measures.	4.04	.721	
15	Risk assessment and mitigation practices are integrated into every stage of supply chain operations.	4.08	.703	
<b>1.d Customer Focus</b>		<b>4.22</b>	<b>.668</b>	
16	The supply chain prioritizes customer satisfaction by consistently meeting and exceeding expectations.	4.50	.879	
17	Feedback from customers is incorporated into supply chain decisions to enhance service quality.	4.06	.798	
18	The supply chain ensures seamless integration between e-commerce and physical retail channels to provide a unified customer experience.	4.03	.757	<b>1</b>
19	Customer needs are proactively addressed through personalized supply chain solutions.	4.06	.748	
20	Delivery lead times are optimized to align with customer preferences and expectations.	4.43	.873	

Scoring 4.04 (SD=0.669), operational efficiency (Lowest-Ranked Dimension) shows room for improvement despite strong order fulfillment performance (M=4.30). While demand forecast scores high (M=4.31), process improvement (M=3.94) and bottleneck analytics (M=3.86) indicate moderate adoption. Notably, automation implementation lags (M=3.78), suggest many organizations still depend on manual processes that may compromise accuracy. In addition, with an overall 4.13 (SD=0.688), Technological Integration (Third-Ranked) shows strong predictive analytics adoption (M=4.40) and real-time monitoring (M=4.38). However, IoT/artificial intelligence integration (M=3.98) and smart cost-reduction technologies (M=3.90) remain underutilized, revealing untapped potential in digital transformation efforts. Moreover, scoring 4.20 (SD=0.612), Collaboration & Risk Management (Second-Ranked) excels in supplier partnerships (M=4.55) and disruption mitigation (M=4.42). While risk assessment practices are established (M=4.08), stakeholder collaboration scores lowest (M=3.93), indicating the need for improved

communication frameworks. Lastly, with a mean of 4.22 (SD=0.668), Customer Focus (Top-Ranked Dimension) shows exceptional customer prioritization (M=4.50) and delivery optimization (M=4.43). Though customer feedback integration (M=4.06) and personalization efforts are strong, omnichannel integration remains a development area (M=4.03).

The analysis reveals customer-centric strategies and risk-resilient partnerships as current strengths while highlighting automation adoption and technological cost-optimization as critical improvement areas. Predictive analytics emerges as a best practice, whereas operational workflows present the most significant enhancement opportunities across supply chain functions. These findings suggest organizations should prioritize: (1) automation investments, (2) smart technology return on investment optimization, and (3) cross-stakeholder collaboration platforms to bridge existing performance gaps.

#### 4.2.2 Sustainability of Supply Chains

The descriptive analysis of sustainability in supply chains provides a comprehensive overview of how hotels integrate environmental, social, and economic sustainability into their supply chain practices as present in table (3). The overall mean score for sustainability is 4.17 (SD = 0.573), indicating a strong commitment to sustainable supply chain management.

Table (3) Descriptive Statistics for Sustainability of Supply Chains

		Mean	SD	Rank
<b>2. Sustainability</b>		<b>4.16</b>	<b>.572</b>	
<b>2. A. Environmental</b>		<b>4.13</b>	<b>.580</b>	
1	The hotel sources environmentally friendly food products produced locally.	4.29	.940	<b>3</b>
2	The hotel uses natural and eco-friendly cleaning supplies in its operations.	3.93	.864	
3	The hotel avoids purchasing food products that cannot be recycled or reused.	4.39	.838	
4	The hotel minimizes the use of excessive packaging for food and other products.	3.87	.896	
5	The hotel uses recyclable packaging materials for all food products.	3.87	.732	
6	The hotel implements strategies to reduce food waste generated per guest visit.	4.33	.916	
7	The hotel adopts eco-friendly waste management practices, including proper disposal and recycling.	4.01	.687	
8	The hotel has an environmental policy that focuses on sustainable sourcing of local food and materials.	3.96	.649	
9	The hotel prioritizes sourcing natural food products from nearby suppliers.	4.43	.826	
10	The hotel incorporates seasonal food items to reduce environmental impact.	3.99	.715	
11	The hotel relies on certified organic products sourced locally to ensure sustainability.	4.40	.823	
<b>2.B. Social</b>		<b>4.15</b>	<b>.627</b>	<b>2</b>

		Mean	SD	Rank
12	The hotel sources food and materials from suppliers who donate surplus goods to local communities.	3.90	.784	
13	The hotel employs local staff to support economic development in the community.	4.46	.972	
14	The hotel ensures fair wages and safe working conditions for all employees in the supply chain.	4.00	.708	
15	The hotel contracts with suppliers who are committed to sustainable and ethical business practices.	4.49	.832	
16	The hotel ensures that all supply chain operations comply with local laws and ethical standards.	4.05	.754	
17	The hotel promotes transparency by providing accurate information about food products sourced through its supply chain.	3.94	.706	
18	The hotel encourages its suppliers to engage in community-based social responsibility initiatives.	4.45	.795	
19	The hotel works with suppliers to deliver high-quality food products that meet sustainability standards.	4.01	.769	
20	The hotel stimulates local economic development by prioritizing local suppliers for its food and material needs.	4.08	.705	
<b>2.C. Economic</b>		<b>4.21</b>	<b>.588</b>	<b>1</b>
21	The hotel optimizes sourcing and logistics to maintain low operational costs while ensuring sustainability.	4.41	.897	
22	The hotel achieves high operational performance through efficient supply chain practices.	4.00	.708	
23	The hotel increases profitability by integrating sustainability into its supply chain operations.	4.08	.644	
24	The hotel maintains a competitive advantage by sourcing cost-effective, sustainable products.	4.49	.862	
25	The hotel generates high returns on investments through sustainable supply chain practices.	4.02	.737	
26	The hotel regularly introduces innovative and sustainable food products to meet market demand.	4.45	.801	
27	The hotel invests in marketing campaigns to promote its sustainable supply chain practices.	4.00	.764	

The findings provide robust evidence of hotels' sustainability performance across three key dimensions. With economic sustainability leading at a mean score of 4.21 (SD=0.588), the data clearly shows that hotels are most advanced in aligning sustainable practices with business outcomes. This is particularly evident in their sourcing strategies, where cost-effective sustainable products scored highest (M=4.49, SD=0.862) and innovative food offerings performed strongly (M=4.45, SD=0.801). These numbers confirm that sustainability is being successfully integrated into core business operations rather than treated as a peripheral concern.

Environmental sustainability presents a more nuanced picture, with an overall mean of 4.13 (SD=0.580). The impressive scores for local and organic sourcing (M=4.43,

SD=0.826 and M=4.40, SD=0.823, respectively) demonstrate successful adoption of sustainable procurement practices. However, the significantly lower scores for packaging solutions (both at M=3.87) and eco-friendly cleaning supplies (M=3.93, SD=0.864) reveal specific operational areas requiring attention. The standard deviations, particularly for food waste reduction (SD=0.916), suggest variability in implementation across different properties.

Social sustainability metrics tell a story of strong ethical foundations with room for growth. While supplier ethics (M=4.49, SD=0.832) and local employment (M=4.46, SD=0.972) show excellent performance, the lower scores for surplus redistribution (M=3.90, SD=0.784) and product transparency (M=3.94, SD=0.706) indicate untapped potential. The relatively high standard deviations in these areas suggest inconsistent implementation across the industry.

The statistics particularly highlight an interesting disconnect - while hotels excel in operationalizing sustainable practices (as shown by the high economic sustainability scores), their marketing of these efforts lags (M=4.00, SD=0.764). This gap between implementation and communication represents a clear opportunity for hotels to better leverage their sustainability investments for competitive advantage. The data consistently shows that where sustainability aligns with core business objectives (cost management, product innovation), adoption is strongest, while more peripheral applications (packaging, marketing) show more variability.

### 4.3 Measurement Model

#### 4.3.1 Validity and Reliability

Table (4) outlines the measurement model for key latent variables: sustainability and supply chain excellence, which are essential in evaluating supply chain performance. The model is assessed using multiple indices—factor loadings, Cronbach's alpha, composite reliability, and AVE extracted to ensure construct quality and reliability.

Table (4): Measurement Model

Latent Variable	Item	Loading	Cronbach's Alpha	Composite Reliability	AVE
Sustainability	Sustainability1	0.723	0.965	0.968	0.532
	Sustainability2	0.832			
	Sustainability3	0.710			
	Sustainability4	0.895			
	Sustainability5	0.717			
	Sustainability6	0.751			
	Sustainability7	0.702			
	Sustainability8	0.792			
	Sustainability9	0.783			
	Sustainability10	0.768			
	Sustainability11	0.704			
	Sustainability12	0.827			
	Sustainability13	0.854			
	Sustainability14	0.764			
	Sustainability15	0.782			
	Sustainability16	0.847			
	Sustainability17	0.793			

Latent Variable	Item	Loading	Cronbach's Alpha	Composite Reliability	AVE
	Sustainability18	0.810			
	Sustainability19	0.794			
	Sustainability20	0.751			
	Sustainability21	0.770			
	Sustainability22	0.742			
	Sustainability23	0.770			
	Sustainability24	0.739			
	Sustainability25	0.735			
	Sustainability26	0.720			
	Sustainability27	0.789			
Excellence	Excellence1	0.751	0.959	0.963	0.565
	Excellence2	0.785			
	Excellence3	0.761			
	Excellence4	0.714			
	Excellence5	0.804			
	Excellence6	0.821			
	Excellence7	0.841			
	Excellence8	0.742			
	Excellence9	0.742			
	Excellence10	0.835			
	Excellence11	0.787			
	Excellence12	0.756			
	Excellence13	0.714			
	Excellence14	0.769			
	Excellence15	0.765			
	Excellence16	0.701			
	Excellence17	0.760			
	Excellence18	0.779			
	Excellence19	0.784			
	Excellence20	0.782			

For Sustainability, the factor loadings (0.702–0.895) indicate strong item-construct relationships. A Cronbach's alpha of 0.965 and composite reliability of 0.968 confirm high internal consistency. The AVE (0.532) exceeds the 0.50 threshold, demonstrating adequate convergent validity, while the variance inflation factor (3.897) suggests no significant multicollinearity (Fornell & Larcker, 1981; Hair et al., 2011). Meanwhile, for supply chain excellence, this construct shows robust reliability, with factor loadings (0.701–0.841), Cronbach's alpha (0.959), and composite reliability (0.963). The AVE (0.565) further supports convergent validity (Henseler et al., 2015, Kock, 2025). Overall, the measurement model demonstrates strong psychometric properties, ensuring valid and reliable constructs for further analysis.

### Validity Assessment

Table (5) presents the Fornell-Larcker criterion and the HTMT ratio were used to evaluate discriminant validity. Fornell-Larcker Criterion: sustainability (AVE = 0.729) shows discriminant validity against excellence (correlation = 0.545).

Meanwhile, excellence (AVE = 0.752) is distinct from sustainability and other constructs.

Table (5) Fornell-Larcker Criterion

Latent Variable	Sustainability	Excellence
Sustainability	<b>0.729</b>	
Excellence	0.545	<b>0.752</b>

Moreover, HTMT Analysis revealed that the HTMT value for sustainability-excellence is 0.676, which is below the 0.90 threshold, confirming discriminant validity (Henseler et al., 2015).

Table (6) Heterotrait-Monotrait Ratio (HTMT)

Latent Variable	Sustainability	Excellence
Sustainability		
Excellence	0.676	

These tests confirm that the constructs are distinct and well-represented in the model.

#### 4.4 Analysis of Demographic Differences

The analysis revealed significant demographic variations in employee perceptions of sustainability and supply chain excellence as present in table (7). Male employees demonstrated consistently stronger positive perceptions than their female counterparts, with statistically significant differences for both sustainability ( $Z=-4.817$ ,  $p<0.001$ ) and supply chain excellence ( $Z=-3.471$ ,  $p=0.001$ ). Age emerged as an important factor, with the oldest employees (55 years and above) showing the most favorable views on sustainability (mean rank=291.50), while those aged 35-45 expressed the highest perceptions of excellence (mean rank=244.28). Younger workers under 25 years old consistently held the least positive views across both measures.

Educational attainment significantly influenced perceptions, as doctoral degree holders reported the strongest agreement with sustainability principles (mean rank=287.25), while employees in the "Other" education category surprisingly showed the highest ratings for supply chain excellence (mean rank=290.65). Those with only high school education consistently ranked lowest in both categories. Organizational hierarchy played a crucial role, with top management expressing the most positive views on both sustainability (mean rank=280.44) and excellence (mean rank=247.62), in stark contrast to non-management staff who recorded the lowest scores (120.00 and 152.40 respectively).

Table (7) Differences of Sustainability and Supply Chain Excellence

Demographic Factor	Category	Variable	N	Mean Rank	Test Statistic	p-value
Gender	Male	Sustainability	210	228.77	$Z = -4.817$	<0.001
	Female	Sustainability	193	172.88		
	Male	Excellence	210	221.13	$Z = -3.471$	0.001
	Female	Excellence	193	181.19		
Age	<25 years	Sustainability	95	97.18	$\chi^2 = 126.419$	<0.001
	25-35 years	Sustainability	108	196.50		
	35-45 years	Sustainability	92	230.37		
	45-55 years	Sustainability	88	271.91		

	≥55 years	Sustainability	20	291.50	$\chi^2 = 36.906$	<0.001
	<25 years	Excellence	95	146.78		
	25-35 years	Excellence	108	200.28		
	35-45 years	Excellence	92	244.28		
	45-55 years	Excellence	88	210.64		
	≥55 years	Excellence	20	241.10		
<b>Education</b>	High school	Sustainability	37	134.50	$\chi^2 = 41.550$	<0.001
	Bachelor's Degree	Sustainability	277	206.28		
	Master's Degree	Sustainability	40	147.10		
	Doctoral Degree	Sustainability	32	287.25		
	Other	Sustainability	17	247.82		
	High school	Excellence	37	169.69	$\chi^2 = 22.838$	<0.001
	Bachelor's degree	Excellence	277	195.98		
	Master's degree	Excellence	40	188.10		
	Doctoral degree	Excellence	32	261.75		
	Other	Excellence	17	290.65		
<b>Occupation</b>	Top management	Sustainability	68	280.44	$\chi^2 = 110.522$	<0.001
	Middle management	Sustainability	108	251.91		
	Supervisory	Sustainability	108	193.06		
	Non-management	Sustainability	119	120.00		
	Top management	Excellence	68	247.62	$\chi^2 = 40.694$	<0.001
	Middle management	Excellence	108	233.17		
	Supervisory	Excellence	108	196.76		
	Non-management	Excellence	119	152.40		
<b>Experience</b>	<1 year	Sustainability	34	86.10	$\chi^2 = 110.437$	<0.001
	1-3 years	Sustainability	73	122.28		
	4-7 years	Sustainability	28	252.07		
	8-10 years	Sustainability	96	192.83		
	>10 years	Sustainability	172	255.71		
	<1 year	Excellence	34	97.57	$\chi^2 = 39.183$	<0.001
	1-3 years	Excellence	73	181.16		
	4-7 years	Excellence	28	189.79		
	8-10 years	Excellence	96	228.50		
	>10 years	Excellence	172	218.69		

Work experience also shaped perceptions meaningfully. Employees with more than ten years of service strongly supported sustainability initiatives (mean rank=255.71), while those with 8-10 years of experience rated supply chain excellence highest (mean rank=228.50). New employees with less than one year of experience consistently demonstrated the least favorable perceptions in both areas. All these differences were statistically significant at  $p < 0.001$ , indicating robust patterns across the organization's demographic groups. The findings collectively suggest that more experienced, highly

educated, and senior employees tend to hold more positive views about the organization's sustainability practices and supply chain performance.

All differences were statistically significant ( $p < 0.001$ ) across all demographic factors, indicating robust variation in perceptions based on employee characteristics. The findings suggest that more experienced, educated, and senior employees tend to have more positive perceptions of both sustainability practices and supply chain excellence in the organization.

#### 4.5 Hypothesis Testing

The study as shown in figure (1) and Table (8) reveals a significant positive link between supply chain sustainability and supply chain excellence (H1) ( $\beta = 0.723$ ,  $p < 0.001$ ), demonstrating that sustainable practices—such as responsible sourcing, environmental considerations, and ethical operations—directly improve overall supply chain performance.

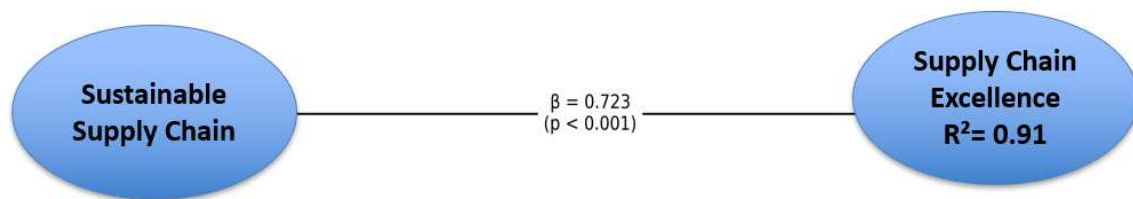


Figure (1) structural Equation Model

The value of  $R^2$  (0.91) for supply chain excellence indicates that sustainability plays a major role in driving efficiency, customer satisfaction, and operational success.

Table (8) Testing the Study Hypotheses

Hypothesis	P-value	Result
<b>H1:</b> Sustainable Supply Chain has a significant positive effect on Supply Chain Excellence	<0.001	Supported
<b>H2:</b> There is a significant difference among respondents' perception of supply chain excellence with regard to their demographic data (gender, age, education, occupation and work experience)	<0.001	Supported
<b>H3:</b> There is a significant difference among respondents' perception of sustainability with regard to their demographic data (gender, age, education, occupation and work experience)	<0.001	Supported

Additionally, there are significant differences in respondents' perceptions of sustainability and supply chain excellence based on gender, age, education, occupation, and experience (H2-H3), highlighting the influence of demographic factors on these concepts. The significant positive impact of sustainability practices on supply chain excellence aligns with Resource-Based View theory, confirming that sustainability can act as a VRIN resource in hotels. Furthermore, the study's findings are consistent with the Triple Bottom Line framework, highlighting that balancing environmental, social, and economic pillars contributes to operational excellence. Differences across demographics, such as greater sustainability perceptions among

older employees and senior managers, may be explained by their greater exposure to long-term strategic goals and environmental initiatives.

## 5. Discussion

The study demonstrates that supply chain sustainability has a significant positive impact on supply chain excellence ( $\beta = 0.723$ ,  $p < 0.001$ ), confirming prior theoretical assertions about sustainability-oriented supply chains (Seuring & Müller, 2008, Saberi et al., 2019). Sustainable practices including waste reduction, energy efficiency, and fair labor policies enhance performance through improved cost efficiency, stakeholder engagement, and corporate reputation (Behzadi et al., 2020).

The high  $R^2$  value for supply chain excellence (0.91) substantiates that sustainability accounts for substantial variance in excellence outcomes. Descriptive statistics reveal a strong adoption of sustainability practices ( $M = 4.37$ ,  $SD = 0.68$ ) and excellence ( $M = 4.41$ ,  $SD = 0.65$ ) in hotels surveyed. Correlation analysis shows sustainability strongly correlates with excellence ( $r = 0.91$ ,  $p < 0.001$ ), supporting the triple-bottom-line framework for competitive advantage (Carter & Rogers, 2008). Furthermore, the study's findings support and extend the Resource-Based View theory, demonstrating that sustainable supply chain capabilities, such as ethical sourcing, eco-efficient operations, and stakeholder collaboration, constitute valuable, rare, inimitable, and non-substitutable resources that drive competitive advantage in the hotel sector (Carter & Rogers, 2008). Additionally, the Triple Bottom Line framework is reinforced, as the results highlight that environmental, social, and economic sustainability pillars collectively enhance supply chain excellence.

Compared to previous studies, such as Choi et al. (2018), who emphasized the positive role of local sourcing in enhancing operational performance, this study provides broader evidence by showing that sustainability impacts not only operational efficiency but also collaboration, technological integration, and customer focus. Similarly, while Govindan et al. (2015) underlined the role of green practices in manufacturing supply chains, this research extends the understanding to service-based industries like hospitality, highlighting the nuances of sustainable supply chain management in hotels, including service co-production and perishability challenges. Thus, the findings contribute to the growing body of literature positioning sustainability as a strategic lever for supply chain excellence beyond manufacturing contexts. Demographic analysis yields important distinctions:

- Male respondents report higher perceptions of sustainability and excellence (Ivanov et al., 2021)
- Older employees demonstrate greater recognition of sustainability's strategic importance (Christopher, 2016)
- Higher educational attainment correlates with better understanding of sustainable practices

The findings provide strategic implications for hotel managers, emphasizing the necessity of embedding sustainability into supply chain operations for long-term competitiveness (Kamalahmadi & Parast, 2016). Future research could explore industry-specific variations and technological enablers of sustainability-driven excellence.

## 6. Conclusion

This study investigated the relationship between supply chain sustainability and supply chain excellence in the hotel industry, particularly in the context of increasing global supply chain uncertainties. The primary objective was to explore how sustainability practices contribute to achieving supply chain excellence by fostering operational efficiency, strategic collaboration, and customer satisfaction. The research adopted a quantitative approach, utilizing a structured questionnaire to measure sustainability through its environmental, social, and economic dimensions. Meanwhile, supply chain excellence was assessed based on operational efficiency, technological integration, collaboration, risk management, and customer focus.

Data were gathered from 403 professionals in the hotel industry, encompassing various organizational levels to ensure a comprehensive understanding of supply chain sustainability and excellence. The study employed rigorous statistical analyses, including structural equation modeling, to examine hypothesized relationships. The findings revealed a significant and positive impact of sustainability on supply chain excellence, indicating that hotels that integrate sustainable supply chain practices benefit from enhanced efficiency, reduced operational costs, improved stakeholder engagement, and a stronger competitive edge. The high explanatory power of the model ( $R^2 = 0.91$  for supply chain excellence) suggests that sustainability is a major determinant of supply chain performance and long-term success.

Beyond these primary findings, the study also analyzed demographic influences on perceptions of supply chain sustainability and excellence. Results indicated that professional experience and educational background shape strategic perspectives, with more experienced and highly educated individuals demonstrating stronger inclinations toward sustainability-driven supply chain initiatives. This insight highlights the importance of targeted training and awareness programs in shaping sustainable supply chain practices. Based on the findings, a conceptual framework emerges wherein sustainable supply chain management practices (environmental initiatives, ethical sourcing, and economic optimization) act as strategic resources that enhance supply chain excellence through operational efficiency, technological integration, collaboration, and customer focus.

### 6.1 Theoretical Implications

This study makes significant contributions to the academic discourse on supply chain management by reinforcing the critical role of sustainability as a driver of supply chain excellence. Prior research has often examined sustainability and supply chain excellence as separate constructs, but this study integrates them into a cohesive framework, offering new insights into their interconnection. The empirical findings strongly support the resource-based view theory, affirming that sustainability acts as a strategic resource that enhances a firm's long-term competitive advantage.

Additionally, the study expands upon the application of the triple bottom line framework within the hospitality industry by demonstrating how the environmental, social, and economic dimensions of sustainability collectively shape supply chain excellence. Sustainable practices not only contribute to corporate social responsibility but also improve operational effectiveness, enhance stakeholder engagement, and generate long-term strategic advantages for firms operating in the hospitality sector.

These findings underscore the necessity of embedding sustainability within core supply chain strategies to achieve resilience, adaptability, and excellence in a dynamic global market.

Furthermore, this research enriches the existing body of knowledge by offering a structured understanding of sustainability-driven initiatives, such as ethical sourcing, energy efficiency, waste reduction, and regulatory compliance, directly impact supply chain performance. It provides empirical evidence that firms prioritizing sustainability benefit from improved supply chain visibility, risk mitigation, and stronger partnerships with key stakeholders, leading to more efficient and robust supply networks.

## **6.2 Practical Implications**

The study provides valuable insights for supply chain professionals and hotel managers seeking to enhance performance through sustainability-driven strategies. Given the strong link between sustainability and supply chain excellence, it is imperative that hotel managers integrate eco-friendly and ethical supply chain initiatives into their operations. Implementing green procurement policies, reducing waste, and adopting circular economic principles can drive cost savings, operational efficiencies, and long-term business sustainability.

Additionally, technological advancements play a crucial role in enhancing sustainability and supply chain excellence. Hotels should invest in digital transformation to improve supply chain visibility and operational efficiency. Technologies such as blockchain, predictive analytics, and artificial intelligence driven forecasting can optimize procurement, streamline inventory management, and strengthen supplier collaboration. The adoption of digital solutions facilitates seamless coordination among supply chain stakeholders, enhances responsiveness to market changes, and minimizes inefficiencies and disruptions.

Moreover, the demographic findings from this study suggest the need for tailored professional development initiatives. Training programs should be designed to bridge gaps in supply chain knowledge across different employee groups, ensuring that all organizational levels—from frontline staff to senior management—understand and implement sustainability-focused supply chain practices effectively. By fostering a culture of sustainability through education, organizations can ensure long-term commitment to sustainable supply chain strategies.

Based on the findings, hotel managers are encouraged to invest in digital technologies such as blockchain for supply chain transparency and traceability, and predictive analytics to enhance demand forecasting and risk management (Niu et al., 2021). Additionally, it is advisable for hotels to develop customized sustainability key performance indicators (Sustainability KPIs), such as carbon footprint per guest night, percentage of local procurement, and waste recycling rates, to systematically monitor and improve their sustainable supply chain initiatives. Fostering cross-functional teams that integrate procurement, logistics, and marketing functions around sustainability goals can also enhance organizational alignment and performance.

Another key managerial takeaway from this research is the importance of cross-functional collaboration in supply chain management. Supply chain excellence is not

solely dependent on a single department but requires seamless coordination between procurement, logistics, operations, and strategic planning teams. Hotels should foster integrated supply chain teams, establish sustainability-focused performance metrics, and encourage collaboration across different organizational functions to maximize the benefits of sustainable supply chain practices.

### **6.3 Limitations and Directions for Future Research**

Despite its contributions, this study has several limitations that present opportunities for future research. Despite offering valuable insights, this study has certain limitations. First, the use of a cross-sectional research design limits the ability to observe dynamic changes over time in the adoption and impact of sustainable supply chain practices. Longitudinal studies are recommended to capture sustainability evolution and causal relationships. Second, the absence of key control variables, such as hotel size, ownership type (local versus international chains), and geographic location within Greater Cairo, could influence the generalizability of the results. Future research should incorporate these contextual variables to better understand sector-specific dynamics. Third, while this study confirmed the significant impact of sustainability on supply chain excellence, it did not explicitly measure financial outcomes such as cost savings, return on investment, or profitability. Future studies should examine the direct financial benefits of sustainability initiatives, enabling hotel managers to build stronger business cases for green investments and strategic sustainability programs.

Moreover, future research should explore the financial implications of sustainability-driven supply chain strategies. While this study established a positive link between sustainability and supply chain excellence, additional research is needed to quantify the direct financial benefits, such as cost reductions, revenue growth, and return on investment. Understanding the economic impact of sustainability-driven strategies would further incentivize businesses to integrate sustainability into their core supply chain operations. Future studies should explore how cultural factors, sustainability certifications, and financial outcomes (such as cost savings and return on investment) mediate or moderate the relationship between sustainable supply chain management and supply chain performance. By addressing these limitations and expanding upon existing knowledge, future research can provide deeper insights into the mechanisms through which sustainability enhances supply chain excellence. A more comprehensive understanding of these dynamics will enable both academic researchers and industry professionals to develop more effective, sustainable, and high-performing supply chain strategies in the ever-evolving global business landscape.

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