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Assessing the Role of Integrated Supply Chain and Islamic Practices in Enhancing Halal Supply Chain Integrity (HSCI) and Performance in Pakistan

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ABSTRACT
Background of the study: This study analyses the influence of Integrated Supply Chain (SCI) and Halal Supply Chain Integrity (HSCI) on SMEs' operational performance and customer trust in Pakistan's cosmetics industry. It focuses on 25 SMEs within strategic cities, such as Karachi, Hyderabad, Lahore, and Islamabad.
Methodology: The research utilises SEM by applying the PLS technique, specifically Smart PLS, to analyse the interrelations between SCI, HSCI, operational performance, and customer trust.
Results: The findings imply that both SCI and HSCI significantly affect operational efficiency and build customer confidence in products with halal certification. Adherence to practices regarding halal and effective supply chain management enhances the market position of SMEs, especially in the booming halal cosmetics sector of Pakistan.
Conclusions: The study underlines the importance of halal certification and supply chain credibility in achieving organisational success. Managers and decision-makers in cosmetic companies are advised to prioritise these strategies to gain competitive advantages, foster customer loyalty, and ensure operational efficiency.

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KEYWORDS
Pakistan, halal cosmetics, integrated supply chain, operations performance, halal integrity, operations management.

Introduction

The market of halal products in the cosmetics sector, especially in Muslim countries like Malaysia and Pakistan, is expanding. Therefore, the need for halal cosmetics has arisen because of ethical and religious issues, and it is important that the products and processes used in producing and distributing halal cosmetics are halal (Khaleqi & Pane, 2021). Halal cosmetics cannot use alcohol, and there is strict legislation for them; therefore, Halal Supply Chain Integrity (HSCI) is essential, particularly in processing, preservation, and transportation (Ali et al., 2022). The SCI is needed to sustain quality, accountability, and conformity across halal chains while enhancing the interaction between exterior vendors and distributors and internal business processes (Ali et al., 2021). Thus, proper SCI guarantees that halal necessities are fulfilled and that product quality and consumer confidence are preserved (Ali et al., 2017). Supplier management is important in industries such as the pharmaceutical industry, where it is essential to obtain raw materials that do not contain banned compounds (Tieman, 2011).

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SMEs have an important role in maintaining the halal supply chain, and consumers show more confidence when they comply with Islamic standards (Hasan, 2021; Rajendran & Kamarulzaman, 2019). Islamic supply chain ethics prevent the contamination of products by haram substances so that the end products are 100% halal (Soon et al., 2017). The use of traceability mechanisms adds more support to the HSCI by tracking the movement of the products at different levels of the supply chain to check on halal compliance (Sin et al., 2019).

Though sufficient literature is found about SCI and Islamic practices regarding food industries, still there is little research regarding Halal cosmetics especially in Pakistan. SCI and Islamic practices are applicable in Malaysia and significant while formulating the halal cosmetics (Mohammadian & Hajipour, 2016), (Sin et al., 2019). but the challenge that Pakistan is facing in halal cosmetics markets with certification systems is very different (Memon et al., 2020). In Pakistan's halal cosmetics industry, SMEs need to overcome these challenges with the help of Islamic principles and SCI in order to sustain HSCI integrity as well as enhance business performance. This paper fills the gap by exploring how Pakistani SMEs can adopt SCI to maintain HSCI while sustaining business performance.

Research Objectives

To evaluate the effect of internal and external Integrated Supply Chains on the performance of SMEs in Pakistan's cosmetics industry.

1. To explore how Islamic practices affect the maintenance of halal supply chain integrity in Pakistan's cosmetics industry.
2. The mediating role of Halal Supply Chain Integrity (HSCI) between the Integrated Supply Chain and SMEs' performance in the cosmetics industry will be examined.
3. To identify the specific challenges SMEs face in Pakistan regarding halal compliance in the supply chain and propose strategies for overcoming these challenges.
4. To evaluate consumer perceptions and confidence in halal-certified cosmetic products produced by SMEs in Pakistan.

Research Questions

1. How do internal and external integrated supply chains influence the operations performance of SMEs in Pakistan's cosmetics industry?
2. In what ways do Islamic practices contribute to maintaining halal supply chain integrity within Pakistan's cosmetics sector?
3. What is the mediating role of Halal Supply Chain Integrity (HSCI) in the relationship between Integrated Supply Chain and the performance of SMEs in the halal cosmetics industry?
4. What challenges do SMEs in Pakistan face when ensuring halal compliance across the cosmetics supply chain?
5. How do consumer perceptions and trust in halal-certified cosmetics influence the market performance of SMEs in Pakistan?

Literature Review

Theoretical Background

This paper explores the research question of how Integrated Supply Chain and Islamic practices contribute to HSCI and the performance of the cosmetics industry in Pakistan. To do so, several theoretical perspectives are found useful. These theories include Social Contract Theory (SCT), Resource-Based View (RBV), and Institutional Theory. These frameworks provide a set of perspectives

on supply chain dynamics, the firm's environmental and social impacts, and the effects of Islamic practices on Halal supply chain sustainability and performance.

SCT focuses on the corporate roles in the supply chain that consider environmental, social and religious aspects. According to Heydari and Rafiei (2020), it is a moral imperative and a strategic business model to eliminate these problems. The theory examines Halal consumers and supply chains as organisations and places where seminal environmental sustainability and Islamic ethical standards apply. However, Dekkers et al. (2020) pointed out that SCT does not focus on supply chains' financial and transactional perspectives. Therefore, they should be complemented by agency theory and transaction cost economics as the financial implications of supply chain ethics, such as Halal certification, are very significant in cosmetics.

RBV demonstrates how firms mobilise resources for competitive advantage. In their work, Nandi et al. (2020) give insights into how blockchain increases supply chain performance by increasing transparency, which is vital for Halal products. However, Putri et al. (2022) argue that not all organisational capabilities would enhance business performance, especially in the Halal supply chain environment certified for religious compliance and customer loyalty.

Institutional Theory studies organisational behaviour, its relations with the environment, and elements like legislation and customer demands. El-Garaihy et al. (2022) reveal that institutional pressure positively affects green supply chain management. In contrast, Shahzad et al. (2022) demonstrate the role of big data in enhancing supply chain practices. However, Ahmed et al. (2020) noted that it is important for firms to conform to religious standards as they may not necessarily translate to immediate revenue returns. Altogether, these theories form a theoretical foundation by which the author can explain the effects of SCI and Islamic practices on Halal supply chain credibility and cosmetics industry performance.

Theoretical Development of Hypotheses

Different investigations have been conducted about the relationship between implementing Integrated Supply Chain (SCI) and Operations Performance in various organisations to understand the importance of efficient integration in enhancing overall organisational performance. Although the impact of SCI is widely described as positive, opinions about its scope are split depending on business sectors and countries. For example, Masa’deh et al. (2022) identified that SCI improves operations performance in Jordanian food and beverages firms, whereas internal and external integration positively impacts operation efficiency. Ali and Mahmood (2024) also said that performance enhancement through SCI is moderated by PIC, more so through suppliers' and customers' firms' integration.

However, there has been some disagreement concerning the positive impacts of SCI without any condition. Ganbold et al. (2021) identified that such IT capabilities include the advancement of SCI and the decrease of data consistency as internal integration is reduced, contrary to the general notion that SCI subsequently increases performance. Zhang et al. (2022) also pointed out that SCI can likely result in minor performance enhancement without sufficient technology backup. However, Mukhtar and Fazal (2022) contended that integration with innovation is important in enhancing performance in competitive environments as it supports e-commerce.

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However, other researchers argue that contingent factors such as the industry type, technological development, and external interfaces affect absolute performance measures. Based on the data collected from the Pakistan cosmetics industry, SCI positively impacts operation performance because internal and external environmental fit is vital for sustaining competitive advantage. Therefore, the hypothesis is:

H1: This study established that the Integrated Supply Chain has a positive relationship with the Operations Performance of SMEs in the cosmetics industry in Pakistan.

Specifically, practices of Shariah compliance have also received attention for operational repercussions, including operational performance in SMEs. Some literature reveals that implementing Shariah improves operations by increasing transparency and decreasing risk. Menne et al. (2022) provided findings that pointed out that Shariah-compliant SMEs within the cosmetics sector not only enhanced financial performance and business sustainability but also demonstrated that Cheong (2021) pointed out penalties which may occur for non-compliance, which in turn, establishing that the rigid structure of Shariah compliance tends to hamper responsiveness.

However, Ghaffar and Hassan (2023) posited that while Shariah compliance is an excellent measure of OP, resource efficiency is far more decisive. Also, Siddique et al. (2022) stressed that Islamic financial instruments contribute to improving the development and stability of the financial system. On the other hand, Mehmood, Ali and Rashid (2023) noted that Shariah-compliant firms in Pakistan have a problem of underinvestment, but regulatory quality improves operational performance. Therefore, the findings of this paper imply that the increase in productivity can be attributed to Mariah's compliance since operation performance is vital in Pakistan's cosmetic industry, especially when consumer loyalty is paramount.

H2: This paper also confirms that various practices of Shariah compliance positively influence the operations performance of SMEs in Pakistan's cosmetic industry.

HSCI is acknowledged for bridging the relationship between SCI and operations performance in the halal food industries. Yudi Fernando et al. (2023) illustrated that using HSCI leads to enhanced product returns in the supply chain in halal industries. However, some difficulties, such as cross-contamination and standardisation, may hamper the success of HSCI, as indicated by Ali et al. (2022) and Giyanti et al. (2020) opined that internal motivation and organisational commitment are the essentials of halal standards.

In addition, HSCI has a mediating effect on the relationship between Shariah compliance and operation performance. Mani, Jabbour, and Mani (2020) noted that ethical supply chain practices such as Shariah compliance enhance performance, noting that HSCI necessitates halal compliance. Cahyono et al. (2023) contended that the benefits of Shariah compliance depend on HSCI's ability to guarantee standardisation and credibility. Hence,

H3: Halal Supply Chain Integrity (HSCI) mediates the relationship between the Integrated Supply Chain and Operations Performance of SMEs.

H4: Halal Supply Chain Integrity (HSCI) mediates the relationship between Shariah Compliance Practices and SME operations Performance.

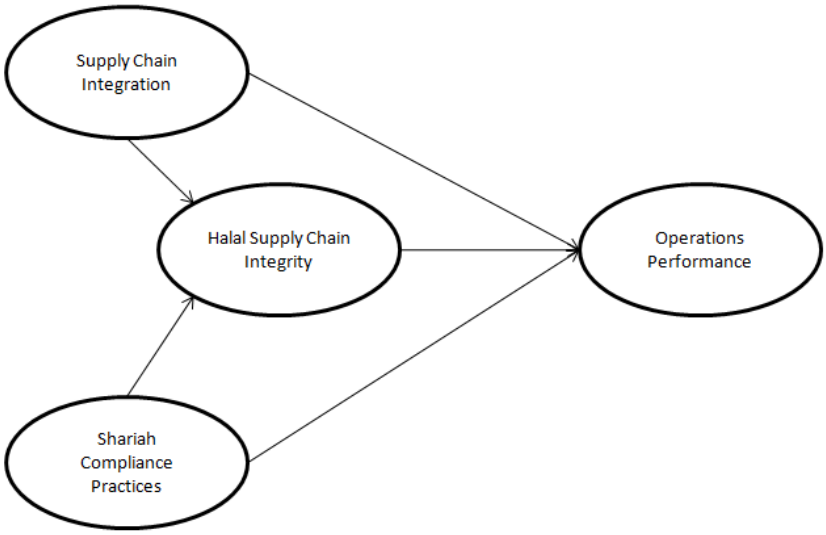

Figure 01: Conceptual Framework

Methodology

A study adopting quantitative research methodology within a positivist epistemological approach focused on the relationship of SCI and HSCI to 25 SMEs from Pakistan's cosmetic industry on the aspects of their operations (Park et al., 2019; Ariff et al., 2021; Mohajan, 2020). Data collection was based on purposive sampling and structured questionnaires targeted at the supply chain, compliance, and operations departments (Bester & Hofisi, 2020; Ali et al., 2022; Zhang et al., 2022). A five-point Likert scale was used to capture perceptions on SCI, HSCI, and performance indicators (Ferreira et al., 2020; Ishtiaque et al., 2020). Data analysis was done using SEM with Smart PLS, focusing on path coefficients and bootstrapping for statistical validation (Haji-Othman & Yusuff, 2022). Results emphasized SCI and HSCI's impacts on Shariah compliance, operational efficiency, customer satisfaction, and competitive market advantage.

Ethical Consideration

In this study, ethical issues were critical to maintaining a high level of research and safeguarding participants. All respondents participated according to the tenets of the Declaration of Helsinki; respondents' written informed consent was obtained before they agreed to participate in the study. To ensure the confidentiality of responses, the data collected was anonymised, while the data collected was stored securely to minimise access by third parties. People were told their information would only be used for research purposes. Moreover, to satisfy the criteria of research ethical principles, ethical clearance was sought from the relevant institutional review boards across the study.

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Data Analysis

Categories	Frequency	Per cent	Cumulative Percent
Gender			
Male	138	69	69
Female	62	31	100
Total	200	100	
Experience			
3-5 Years	25	12.5	12.5
5-7 Years	68	34	46.5
7-9 Years	80	40	86.5
10+ Years	27	13.5	100
Total	200	100	
Designation			
Executive / Sr. Executive	76	38	38
Dy Manager / Manager	88	44	82
General Manager	28	14	96
Director	8	4	100
Total	200	100	
Department			
Supply Chain	73	36.5	36.5
Compliance	43	21.5	58
Operations	62	31	89
Procurement	22	11	100
Total	200	100	
City			
Karachi	77	38.5	38.5
Hyderabad	41	20.5	59
Lahore	24	12	71
Islamabad	58	29	100
Total	200	100	

Table 01: Frequency distribution

Table 01 shows that respondent profile of 200 participants, comprising 69% male and 31% females, throws light on the effect of Integrated Supply Chain practices and Halal compliance in the cosmetic SMEs of Pakistan. Supply Chain contributed 36.5% of participants, while Operations and Compliance contributed 31% and 21.5% in the study. Gender differences, experience, and geographical distribution are evident in the study.

Reliability and Validity

	HSCI	OP	SCI	SCP
HSCI1	0.807			
HSCI2	0.803			
HSCI3	0.794			
HSCI4	0.736			
HSCI5	0.812			
OP1		0.846		
OP2		0.885		
OP3		0.912		
OP4		0.906		
SCI1			0.828	
SCI2			0.859	
SCI3			0.871	
SCI5			0.826	
SCP2				0.863
SCP3				0.890
SCP4				0.899

Table 02: Outer Loadings (HSCI: Halal Integrated Supply Chain, OP: Operations Performance, SCI: Integrated Supply Chain, SCP: Shariah Compliance Practices

The outer loadings table is an important assessment of indicator reliability necessary for reflective measurement models. Following Hair et al. (2017), the outer loading should be above 0.70 to be considered acceptable indicator reliability, which means that an indicator sufficiently represents the construct to which it belongs. A few items, namely SCI4 and SCP1, were also omitted from the construct because of their loading problems. As illustrated in this table, all loadings are above the recommended 0.70 level, which shows that all items have acceptable reliability across the constructs.

	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
Halal Integrated Supply Chain	0.851	0.857	0.626
Operations Performance	0.911	0.932	0.788
Shariah Compliance Practices	0.860	0.865	0.782
Integrated Supply Chain	0.868	0.873	0.717

Table 03: Composite Reliability

The table assesses the reliability and validity of the constructs used. The estimated Cronbach's alpha coefficients of all the scales were above 0.80, suggesting reliable internal consistency (Hair et al., 2017). All the composite reliability values are above the cut-off point of 0.70, thus supporting the reliability of all the constructs. The AVE values of 0.626 to 0.788 are higher than 0.50, which means that more than 50% variance in each construct is accounted for by its indicators, confirming the convergent validity.

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	Halal Integrated Supply Chain	Operations Performance	Shariah Compliance Practices
Halal Integrated Supply Chain			
Operations Performance	0.517		
Shariah Compliance Practices	0.895	0.450	
Integrated Supply Chain	0.852	0.480	0.810

Table 03: Discriminant Validity through HTMT

The result in the table demonstrates the Fornell-Larcker criterion for discriminant validity that indicates that the square of the AVE of each construct should be higher than the value of the correlation between this construct and any other construct (Hair et al., 2017). All correlations are below 0.90, indicating the model's validity.

	Original sample (O)	T statistics (|O/STDEV|)	P values	Remarks
Integrated Supply Chain -> Operations Performance (H1)	0.300	3.487	0.000	Accepted
Shariah Compliance Practices -> Operations Performance (H2)	0.194	2.135	0.033	Accepted
Shariah Compliance Practices -> Halal Integrated Supply Chain -> Operations Performance (H3)	0.151	2.099	0.036	Accepted
Integrated Supply Chain -> Halal Integrated Supply Chain -> Operations Performance (H4)	0.116	1.889	0.059	Rejected

Table 04: Structured Equation Modeling

Bootstrapping results of the structural model are given in Table 3 below. Integrated Supply Chain and Operations Performance Hypothesis 1 (Hypothesis 1) is highly significant (T = 3.487, P = 0.000). Hypothesis 2 (Shariah Compliance and Operations Performance) is also supported (T = 2.135, P = 0.033). The analysis for Hypothesis 3 (Shariah Compliance, Halal Integrated Supply Chain and Operations Performance) is also found significant (T = 2.099, P = 0.036). However, Hypothesis 4 (Integrated Supply Chain and Halal Integrated Supply Chain on Operations Performance) is insignificant (T = 1.889, P = 0.059).

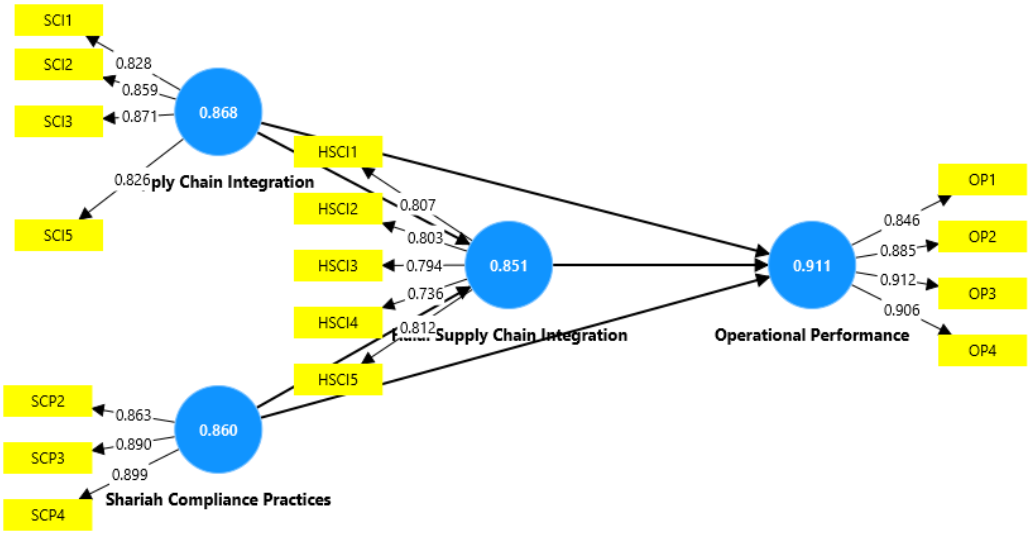

Figure 02: Measurement Model

Discussion

The present study also explored the mediating effects of the Integrated Supply Chain (SCI) and Halal Supply Chain Integrity (HSCI) on the operations performance of SMEs. The results supported previous studies but provided variations on how these factors interact. Hypothesis 1, which postulated a positive relationship between SCI and operations performance, was confirmed, supporting Masa'dah et al. (2022) and Ali & Mahmood (2024), who asserted that enhancement of SCI had a positive impact on organisational efficiency and innovation, respectively. However, the compatibility of technology and information systems used by SCI was deemed to have contributed to some of the contrary results by Ganbold et al. (2021) and Zhang et al. (2022).

The second hypothesis associating Shariah compliance practices with operations performance was also supported, as felt by Menne et al. (2022) and Siddique et al. (2022), where Shariah compliance improves business sustainability and consumer confidence. However, Cheong (2021) pointed out that flexibility was limited by Shariah compliance, which the current study did not agree with. Further, Ghaffar and Hassan (2023) pointed out other factors, such as resource utilisation constraining performance, asserting that Shariah compliance was insufficient to account for better operations. Hypothesis 3, proposing HSCI as a moderator between Shariah-compliant index and operations performance, was accepted and consistent with other scholars like Mani et al. (2020) and Yeh et al. (2020), who emphasised the importance of HSCI on ethical compliance and operational performance.

However, some issues raised by Ali et al. (2022) and Giyanti et al. (2020), such as cross-contamination and internal organisational factors, might have derailed the HSCI plan.
Last, the non-supportive of Hypothesis 4 regarding the mediating role of HSCI affects the SCI on the operations performance positively, differently from the findings of Fernando et al. (2023) and Baridwan & Zaki (2020) and may poorly perform without standard external support. This underlined the need for more empirical work on contextual factors that may explain the antecedents of halal practices in SMEs.

Conclusion and Future Directions

The conclusions drawn from this study emphasise key aspects of the organisational processes of SMEs in Pakistan's cosmetics market. The findings revealed that Integrated Supply Chain (SCI) positively impacted Operations Performance, highlighting its role in improving organisational processes and efficiency (Ali et al., 2022). Additionally, Shariah compliance practices positively influenced Operations Performance, demonstrating that ethical and religious adherence fosters trust and enhances operations (Ali et al., 2021). Furthermore, Halal Supply Chain Integrity (HSCI) mediated the relationship between Shariah compliance and Operations Performance, underlining the necessity of incorporating Halal principles into the supply chain (Ali et al., 2017). However, the study did not find SCI to significantly affect Operations Performance through HSCI, suggesting that other factors may influence this relationship (Ali & Mahmood, 2024).

This research contributes to the literature by addressing the gap in understanding halal supply chain integrity within the context of Pakistan's cosmetics industry (Ahmed et al., 2020). It expands existing theories by demonstrating how Integrated Supply Chain practices and Islamic compliance can enhance halal requirements, providing practical solutions for SMEs in Pakistan (Ali, Iranmanesh, Tan, Zailani, & Omar, 2022). This work aids managers and policymakers in formulating strategies for improving operations and gaining a competitive edge in the global halal market (Ariff et al., 2021).

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The study's limitations suggest areas for future research. Due to time constraints, the Operations Performance was assessed using perceptual data, which could be replaced with actual performance data in future studies to allow a more accurate assessment of SCI and HSCI interventions (Ali, Tan, Pawar, & Makhbul, 2014). Additionally, the cross-sectional design of this study did not establish temporal causality. Thus, a quasi-experimental design in future research could provide more insights (Ali et al., 2021). Finally, the sample of 25 SMEs may not fully represent other industries, and future studies with a more extensive and diverse sample would provide more comprehensive results (Ali et al., 2017).
These findings offer guidance for future research and practical applications for enhancing the halal supply chain in the cosmetics industry.

Author's Contribution

Conception or Design: Fahad Ahmed Khan, Syed Muhammad Fauzan Ali

Data Collection and processing, Analysis or Interpretation of Data: Amna Afzal, Muhammad Ali

Manuscript Writing & Approval: Syed Muhammad Fauzan Ali, Maryam Taj

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