From Fragmentation to Integration: A Review of China's Halal Supply Chain Management and its Role in Achieving Sustainable Development Goals

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ABSTRACT

China has emerged as a pivotal player in the global halal economy, driven by its substantial Muslim population and strategic initiatives like the Belt and Road Initiative (BRI). This paper examines China's halal supply chain management (HSCM), focusing on certification frameworks, technological innovations, and challenges such as fragmented regulations and consumer distrust. Efforts to align with the United Nations Sustainable Development Goals (SDGs) are evident, particularly SDG 2 (Zero Hunger), SDG 8 (Decent Work and Economic Growth), and SDG 12 (Responsible Consumption and Production), through halal industrial zones and blockchain-enabled traceability. Despite advancements, inconsistencies in halal certification and geopolitical tensions hinder China's global competitiveness. Recommendations include centralizing oversight, adopting digital tools, and strengthening international partnerships to enhance transparency and trust. The study underscores the potential of China's halal sector to model sustainable, inclusive growth while addressing cultural and religious diversity.

Keywords: Halal certification, Supply chain transparency, Blockchain technology, Belt and Road Initiative (BRI), Sustainable Development Goals (SDGs)

INTRODUCTION

China has emerged as a significant player in the global halal industry, driven by its substantial Muslim population of over 23 million, predominantly comprising the Hui and Uyghur ethnic minorities (Sarbani & Ibrahim, 2025 ; Pew Research Center, 2011). Beyond catering to domestic demand, China has strategically positioned itself as a major exporter of halal-certified products, including food, pharmaceuticals, and cosmetics, to Muslim-majority markets in Southeast Asia, the Middle East, and Africa (Razak et. al, 2025 ; Hussain et al., 2020). Recognizing the economic potential of the halal sector, the Chinese government has incorporated it into its Belt and Road Initiative (BRI), leveraging trade partnerships with Organization of

Islamic Cooperation (OIC) countries to expand its influence in the global halal market (Jamil & Ibrahim, 2025; Zhang & Guo, 2022).

The development of China's halal industry aligns with several United Nations Sustainable Development Goals (SDGs), particularly SDG 2 (Zero Hunger), SDG 8 (Decent Work and Economic Growth), and SDG 12 (Responsible Consumption and Production). By establishing halal industrial zones in regions like Ningxia, China promotes inclusive economic development while ensuring food security for Muslim populations (Li & Ismail, 2021). Furthermore, the adoption of blockchain and IoT technologies in halal supply chains contributes to SDG 9 (Industry, Innovation and Infrastructure) by enhancing traceability and reducing food waste (Kasdi et. al., 2025 ; Abdul et al., 2023). These efforts demonstrate how China's halal economy can serve as a model for sustainable and ethical food systems that bridge cultural and religious diversity.

Despite this growth, China’s halal supply chain management (HSCM) faces several challenges. One major issue is the lack of standardized halal certification, as different regions enforce varying regulations, leading to inconsistencies in compliance and quality assurance (Razak et. al., 2025 ; Li & Ismail, 2021). Additionally, supply chain transparency remains a concern, with risks of cross-contamination and fraudulent halal labeling undermining consumer trust, particularly in international markets (Rahim & Ibrahim, 2025 ; Baharuddin et al., 2015). Furthermore, while China has made efforts to align its halal standards with global requirements, some Muslim-majority nations remain skeptical of Chinese halal certifications due to perceived gaps in religious oversight (Apandi & Ibrahim, 2025 ; Yang, 2019).

To address these challenges, China has begun adopting advanced technologies such as blockchain for traceability and the Internet of Things (IoT) for real-time halal logistics monitoring (Johan et. al., 2025 ; Abdul et al., 2023). Additionally, the government has established halal industrial zones in regions like Ningxia to strengthen production and export capabilities (Amer & Ibrahim, 2025 ; Zhang & Guo, 2022). This paper reviews the structure of China’s halal supply chains, analyzes existing regulatory mechanisms, explores technological innovations enhancing integrity, and evaluates future opportunities for growth. By doing so, it provides a comprehensive understanding of China’s evolving role in the global halal economy and the steps needed to overcome existing barriers.

Halal Certification and Regulatory Framework in China

China’s halal certification system is notably decentralized, contrasting with Muslim-majority nations such as Malaysia, where a single authoritative body—the Department of Islamic Development Malaysia (JAKIM)—oversees halal compliance (Othman & Ibrahim, 2025 ; Riaz & Chaudry, 2018). Instead, China’s regulatory landscape is fragmented, with multiple entities involved in halal certification, leading to inconsistencies in standards and enforcement. The China Islamic Association (CIA) serves as the primary national body for halal certification, yet its credentials often lack international recognition, limiting the global marketability of Chinese halal products (Baharuddin et al., 2015). At the provincial level, regions with significant Muslim populations, such as Ningxia and Gansu, have established their own halal certification agencies, further contributing to regulatory disparities (Li & Ismail, 2021). Additionally, the National Standardization Commission introduced *GB/T 35416-2017*, a set of general requirements for halal food production, but implementation remains inconsistent across different jurisdictions (Yang, 2019).

Challenges in China’s Halal Certification System

One of the most pressing issues is the lack of a unified national standard, resulting in varying interpretations of halal compliance across provinces. For instance, some regions mandate strict segregation of halal and non-halal production lines, while others permit shared facilities with minimal oversight (Zhang & Guo, 2022). This inconsistency not only confuses domestic producers but also raises concerns among international buyers regarding the reliability of Chinese halal certifications. Another major challenge is the proliferation of fraudulent halal labels, where some businesses exploit the lack of stringent enforcement to market non-compliant products as halal (Hussain et al., 2020). This malpractice undermines consumer trust and has led to scandals, such as the 2018 incident where a Chinese meat supplier falsely labeled non-halal poultry for export to Middle Eastern markets (Abdul et al., 2023).

Furthermore, limited international recognition remains a significant barrier. Many Muslim-majority importers, particularly in the Gulf Cooperation Council (GCC) countries and Southeast Asia, hesitate to accept Chinese halal certifications due to perceived weaknesses in religious oversight and verification processes (Baharuddin et al., 2015). While China has sought to align its standards with global halal benchmarks, such as those set by the Islamic Food and Nutrition Council of America (IFANCA) and the World Halal Council (WHC), skepticism persists (Riaz & Chaudry, 2018). Efforts to improve recognition, such as bilateral agreements with Malaysia and Indonesia, have seen partial success, but full harmonization remains elusive (Li & Ismail, 2021).

Future Directions for Regulatory Improvement

To strengthen its halal certification framework, China must prioritize centralized regulation, possibly under a single national halal authority akin to JAKIM, to ensure consistency in standards and enforcement (Yang, 2019). Enhanced supply chain traceability technologies, such as blockchain, could mitigate fraud by providing transparent, immutable records of halal compliance at every production stage (Abdul et al., 2023). Additionally, greater collaboration with international halal bodies—through mutual recognition agreements and joint audits—could improve the credibility of Chinese certifications in global markets (Zhang & Guo, 2022). Without these reforms, China risks losing its competitive edge in the rapidly growing halal economy, valued at over $2.3 trillion worldwide (State of the Global Islamic Economy Report, 2023).

Structure of Halal Supply Chains in China

Sourcing and Production

China's halal supply chain begins with sourcing and production, concentrated primarily in regions with significant Muslim populations, including Ningxia Hui Autonomous Region, Xinjiang, Gansu, and Qinghai (Zhang & Guo, 2022). These areas serve as key hubs for halal food production due to their established Muslim communities, religious compliance awareness, and government support for halal industries. Ningxia, in particular, has been designated as China's halal economic center, hosting specialized industrial parks for halal meat processing, dairy, and packaged foods (Li & Ismail, 2021). The halal meat industry—particularly beef and lamb—dominates production, with strict slaughtering practices adhering to Islamic *zabihah* requirements (Riaz & Chaudry, 2018). Additionally, halal-certified dairy products, such as milk and yogurt, along with processed foods like instant noodles and snacks, have seen growing demand both domestically and in export markets (Yang, 2019).

However, challenges persist in ensuring supply chain integrity at the sourcing stage. While large-scale producers maintain segregated halal production lines, smaller enterprises sometimes fail to enforce strict separation from non-halal processes, raising contamination risks (Abdul et al., 2023). Furthermore, the lack of a centralized halal certification system means that standards can vary significantly between regions, affecting product consistency (Baharuddin et al., 2015). To mitigate these issues, some Chinese manufacturers have begun adopting blockchain-based traceability systems, allowing consumers and exporters to verify halal compliance from farm to fork (Hussain et al., 2020).

Logistics and Distribution

The logistics and distribution segment of China's halal supply chain faces unique challenges due to the need for strict segregation between halal and non-halal products. In storage and transportation, halal goods must be handled separately to prevent cross-contamination, requiring dedicated warehouses and transport vehicles (Riaz & Chaudry, 2018). This is particularly critical for halal meat exports, where cold chain logistics must comply with both Islamic requirements and international food safety standards (Zhang & Guo, 2022). Companies like China COFCO Group and Yili Group have invested in halal-compliant cold storage and refrigerated transport networks to maintain product integrity during domestic and international distribution (Li & Ismail, 2021).

Despite advancements, logistical inefficiencies remain, particularly in rural production zones where infrastructure is underdeveloped. Some halal exporters resort to third-party logistics providers that may not

fully adhere to halal handling protocols, increasing contamination risks (Yang, 2019). To address this, the Chinese government has promoted halal logistics certification programs, though adoption is still limited compared to global halal logistics leaders like Malaysia and the UAE (Abdul et al., 2023).

Export Markets

China's halal exports are strategically aligned with its Belt and Road Initiative (BRI), facilitating trade with Muslim-majority nations. The top destinations for Chinese halal products include Malaysia, Indonesia, the UAE, Egypt, and Central Asian countries (Hussain et al., 2020). These markets import a wide range of goods, from frozen halal meat and dairy to packaged halal snacks and ready-to-eat meals (Baharuddin et al., 2015). Malaysia and Indonesia, in particular, serve as key entry points for Chinese halal products into the broader ASEAN market, despite occasional regulatory hurdles due to differing halal certification standards (Li & Ismail, 2021).

The BRI has enhanced export logistics through improved rail and maritime links, such as the China-Europe Railway Express, which transports halal goods to Central Asia and the Middle East (Zhang & Guo, 2022). Additionally, China has established halal trade exhibitions and e-commerce platforms, such as the China-Arab Expo in Ningxia, to boost exports (Yang, 2019). However, competition from established halal exporters like Brazil, Australia, and Thailand poses challenges, requiring China to further enhance certification credibility and supply chain transparency (Riaz & Chaudry, 2018).

Challenges in China's Halal Supply Chains

China's halal supply chain faces several systemic challenges that hinder its domestic development and global competitiveness. One of the most pressing issues is the lack of centralized regulation, which has resulted in a fragmented certification system with varying standards across different provinces (Li & Ismail, 2021). While the China Islamic Association (CIA) serves as the primary certification body, regional authorities in Muslim-concentrated areas like Ningxia and Gansu have established their own halal standards, leading to inconsistencies in production protocols and certification requirements (Zhang & Guo, 2022). This regulatory fragmentation creates confusion for both domestic producers and international buyers, who struggle to verify whether products meet universally accepted halal standards (Baharuddin et al., 2015).

Another critical challenge is traceability issues throughout the supply chain. Many Chinese halal producers lack robust systems to track raw materials from their source through processing, packaging, and distribution (Abdul et al., 2023). While some large corporations have implemented blockchain technology for halal verification, most small and medium enterprises rely on paper-based documentation that is vulnerable to fraud and errors (Hussain et al., 2020). This opacity in the supply chain makes it difficult for consumers, particularly in export markets, to verify the authenticity of halal claims, undermining trust in Chinese halal products (Riaz & Chaudry, 2018). The problem is particularly acute in meat processing, where concerns about potential mixing of halal and non-halal meats have led to import restrictions in some Muslim-majority countries (Yang, 2019).

Geopolitical factors, particularly tensions in Xinjiang, have also impacted China's halal trade. International scrutiny over human rights issues in Xinjiang has led some Muslim-majority countries to view halal products from the region with suspicion (Petersen, 2022). Several Middle Eastern and Southeast Asian importers have reportedly shifted their halal meat sourcing away from Xinjiang due to these concerns (Wilson, 2023). This geopolitical dimension adds another layer of complexity to China's halal exports, as political perceptions increasingly influence purchasing decisions in Muslim markets (Hussain et al., 2020).

Perhaps the most fundamental challenge is consumer distrust, both domestically and internationally. Many Muslim consumers question the authenticity of Chinese halal products due to several high-profile scandals involving fraudulent halal labeling (Baharuddin et al., 2015). In 2018, for instance, a Chinese poultry supplier was found to be exporting non-halal chicken to Middle Eastern markets with falsified certification documents (Abdul et al., 2023). Such incidents have damaged China's reputation as a reliable halal producer and made it difficult for legitimate halal businesses to gain consumer confidence (Li & Ismail, 2021). The distrust is

compounded by cultural differences in halal interpretation, as some international Muslim communities doubt whether Chinese certification bodies fully understand and implement Islamic dietary laws (Riaz & Chaudry, 2018).

These challenges collectively constrain the growth potential of China's halal industry. While the government has taken steps to address some issues through technological solutions like blockchain traceability and standardization efforts, significant work remains to establish China as a trusted player in the global halal market (Zhang & Guo, 2022). Overcoming these hurdles will require not only regulatory reforms but also greater engagement with international halal organizations to build credibility and align standards with global expectations (Yang, 2019).

Technological Innovations in China's Halal Supply Chain Management (HSCM)

China has been actively integrating advanced technologies into its halal supply chains to enhance transparency, compliance, and operational efficiency. These innovations are particularly crucial given the growing global demand for halal products and the need to maintain strict Islamic standards throughout the supply chain. The adoption of blockchain, artificial intelligence (AI), big data analytics, and Internet of Things (IoT) technologies represents a significant step forward in addressing longstanding challenges related to traceability, fraud prevention, and quality control in China's halal industry.

One of the most promising developments is the use of blockchain technology to ensure end-to-end traceability of halal products. Pilot projects in Ningxia, China's halal industry hub, have implemented blockchain to track halal meat from slaughterhouses to export markets (Abdul et al., 2023). These systems record every stage of production, processing, and distribution on an immutable ledger, allowing consumers and regulators to verify the halal status of products in real time. For instance, QR codes on packaging enable buyers in Malaysia and the Middle East to access detailed information about the product's origin, processing methods, and transportation history (Zhang & Guo, 2022). Blockchain not only enhances trust in Chinese halal certifications but also helps prevent fraud—a persistent issue in the industry where false halal labeling has undermined consumer confidence (Li & Ismail, 2021).

Artificial Intelligence (AI) and Big Data are being deployed to strengthen halal compliance and optimize supply chain operations. AI-powered image recognition systems are used in slaughterhouses to monitor and verify halal slaughtering practices, ensuring adherence to *zabihah* requirements (Riaz & Chaudry, 2018). Meanwhile, big data analytics help detect anomalies in supply chain transactions, flagging potential cases of halal certification fraud. For example, AI algorithms can identify discrepancies between reported halal production volumes and actual output, reducing the risk of counterfeit halal products entering the market (Yang, 2019). Additionally, predictive analytics are being used for demand forecasting, allowing halal producers to optimize inventory management and reduce waste—a critical factor for perishable halal goods (Hussain et al., 2020).

The Internet of Things (IoT) plays a vital role in maintaining the integrity of halal perishables during transportation and storage. Temperature-sensitive halal products, such as meat and dairy, require strict climate control to prevent spoilage and maintain halal purity. IoT-enabled sensors in refrigerated trucks and warehouses provide real-time monitoring of temperature, humidity, and other environmental factors (Abdul et al., 2023). If conditions deviate from prescribed standards, automated alerts notify logistics managers to take corrective action. This technology is particularly important for China's halal exports to distant markets in the Middle East and Southeast Asia, where maintaining cold chain integrity during long transit periods is challenging (Zhang & Guo, 2022). Some Chinese halal exporters have also begun using IoT-enabled smart packaging that changes color if products are exposed to non-compliant conditions, providing an additional layer of quality assurance (Baharuddin et al., 2015).

While these technological innovations show great promise, their widespread adoption faces several barriers. Many small and medium-sized halal producers lack the financial resources and technical expertise to implement advanced systems (Li & Ismail, 2021). There are also concerns about data privacy and cybersecurity, particularly for blockchain platforms that store sensitive information about halal certification

and supply chain partners (Yang, 2019). Furthermore, the lack of standardization in halal regulations across different Chinese regions complicates the development of unified technological solutions (Riaz & Chaudry, 2018). Despite these challenges, continued investment in halal tech innovation—supported by government initiatives and private sector partnerships—is expected to significantly enhance the reliability and global competitiveness of China's halal supply chains in coming years.

China's Role in the Global Halal Economy

China has strategically positioned itself as a key player in the global halal economy, leveraging its economic initiatives, technological advancements, and international partnerships to expand its influence in this rapidly growing market. The Belt and Road Initiative (BRI) has been particularly instrumental in facilitating halal trade by improving export logistics and infrastructure connectivity with Muslim-majority countries (Hussain et al., 2020). Through BRI-funded projects such as the China-Pakistan Economic Corridor (CPEC) and the China-Central Asia-West Asia Economic Corridor, China has enhanced transportation networks that are critical for halal exports, including dedicated halal logistics hubs and cold chain facilities (Zhang & Guo, 2022). These developments have significantly reduced transit times for perishable halal goods, such as meat and dairy, to major markets in the Middle East and Southeast Asia, reinforcing China's role as a reliable halal supplier (Li & Ismail, 2021).

The rise of halal e-commerce has further amplified China's presence in the global halal market. Leading platforms such as Alibaba's Tmall Global and JD.com have established specialized halal sections, offering a wide range of certified products—from food and beverages to cosmetics and pharmaceuticals—to domestic and international Muslim consumers (Yang, 2019). These platforms not only provide accessibility but also incorporate blockchain-based verification systems to assure halal authenticity, addressing longstanding concerns about fraudulent certifications (Abdul et al., 2023). During the COVID-19 pandemic, the demand for online halal purchases surged, and Chinese e-commerce giants capitalized on this trend by partnering with halal producers in Ningxia and Xinjiang to streamline cross-border halal trade (Baharuddin et al., 2021).

To strengthen its credibility in the halal sector, China has pursued strategic collaborations with leading Muslim-majority nations. Notably, partnerships with Malaysia's JAKIM and the UAE's Emirates Authority for Standardization and Metrology (ESMA) have been pivotal in aligning Chinese halal standards with internationally recognized benchmarks (Riaz & Chaudry, 2018). These partnerships often involve mutual certification recognition agreements, joint halal research initiatives, and training programs for Chinese halal auditors (Hussain et al., 2020). For example, in 2019, China and Malaysia signed an agreement to harmonize halal certification processes, enabling smoother exports of Chinese halal products to ASEAN markets (Li & Ismail, 2021). Similarly, China's collaboration with Gulf Cooperation Council (GCC) countries has opened doors for halal meat and processed food exports, supported by investments in halal industrial parks in Ningxia tailored to Middle Eastern consumer preferences (Zhang & Guo, 2022).

Despite these advancements, China faces challenges in fully integrating into the global halal economy. Scepticism persists in some Muslim markets regarding the rigor of China's halal certification, particularly due to the absence of a centralized religious oversight body (Baharuddin et al., 2015). Additionally, geopolitical tensions and competition from established halal exporters like Brazil and Australia pose hurdles to China's market expansion (Yang, 2019). Nevertheless, China's multifaceted approach—combining BRI-driven trade infrastructure, e-commerce innovation, and international standardization efforts—demonstrates its long-term commitment to becoming a dominant force in the halal industry, which is projected to be worth $3.2 trillion by 2028 (State of the Global Islamic Economy Report, 2024).

FUTURE DIRECTIONS AND POLICY RECOMMENDATIONS FOR CHINA'S HALAL INDUSTRY

China's halal industry stands at a critical juncture where strategic reforms and international cooperation could solidify its position as a global leader in the halal market. To achieve this, several key policy directions and structural improvements are necessary to address existing challenges and capitalize on emerging opportunities.

The foremost recommendation is the establishment of a National Halal Authority to centralize and standardize halal certification across China. Currently, the fragmented system involving multiple provincial certifiers creates inconsistencies that undermine international confidence (Li & Ismail, 2021). A unified national body, modeled after Malaysia's JAKIM or Indonesia's BPJPH, would ensure consistent application of halal standards and improve recognition in key export markets (Riaz & Chaudry, 2018). This authority should incorporate both technical experts and Islamic scholars to balance commercial and religious requirements, particularly for sensitive areas like meat slaughtering and processing (Baharuddin et al., 2015). The creation of such an institution would require coordination between the China Islamic Association, National Standardization Commission, and provincial governments to harmonize existing regional standards (Zhang & Guo, 2022).

Blockchain adoption for full supply chain traceability represents another critical advancement needed to enhance transparency. While pilot projects in Ningxia have demonstrated blockchain's potential for halal meat exports (Abdul et al., 2023), nationwide implementation would provide immutable records from farm to consumer. This system should integrate with IoT sensors in production facilities and logistics networks to monitor real-time compliance with halal requirements (Yang, 2019). For maximum effectiveness, the blockchain platform should be developed in collaboration with major Muslim importers to ensure compatibility with their verification systems (Hussain et al., 2020). The Chinese government could incentivize adoption through subsidies for SMEs and by making blockchain verification mandatory for halal export licenses (Li & Ismail, 2021).

Strengthening BRI halal trade corridors should be prioritized to optimize China's geographic and infrastructure advantages. This involves developing dedicated halal logistics hubs along BRI routes, particularly in key transit points like Kazakhstan, Pakistan, and Malaysia (Zhang & Guo, 2022). Investments should focus on specialized cold chain infrastructure for halal perishables and streamlined customs procedures for halal-certified goods (Riaz & Chaudry, 2018). The BRI's digital silk road component could be leveraged to create an integrated halal trade platform connecting Chinese producers with Muslim market buyers (Hussain et al., 2020). Additionally, BRI financing could support halal industrial parks in partner countries, creating end-to-end halal supply chains that boost China's export capabilities (Baharuddin et al., 2015).

Enhanced international collaboration is essential for mutual certification recognition and standard harmonization. China should pursue more bilateral agreements with leading halal markets, building on existing partnerships with Malaysia and UAE (Abdul et al., 2023). Joint working groups with organizations like the Standards and Metrology Institute for Islamic Countries (SMIIC) could help align Chinese standards with OIC requirements (Yang, 2019). Training programs for Chinese halal auditors under international Islamic bodies would improve certification credibility (Li & Ismail, 2021). China could also take a leadership role in establishing an Asia-focused halal cooperation framework, similar to the ASEAN Halal Working Group but with broader participation (Zhang & Guo, 2022).

Implementation of these recommendations would require coordinated efforts between government agencies, industry stakeholders, and international partners. The State Administration for Market Regulation should take the lead in regulatory reforms, while the Ministry of Commerce could drive export promotion initiatives (Hussain et al., 2020). Provincial governments in halal production hubs like Ningxia should receive targeted support for infrastructure upgrades (Baharuddin et al., 2015). With the global halal market projected to reach $3.2 trillion by 2028 (State of the Global Islamic Economy Report, 2024), these strategic investments would position China to capture a significantly larger share of this growing economic sector while improving supply chain integrity and consumer trust.

CONCLUSION

China’s halal supply chain management (HSCM) is undergoing significant transformation, shaped by both domestic consumption patterns and the strategic imperatives of the Belt and Road Initiative (BRI). With a Muslim population exceeding 23 million and growing demand for halal-certified products in international markets, China has positioned itself as a critical player in the global halal economy (Pew Research Center, 2011; Zhang & Guo, 2022). However, despite advancements in production capacity, logistics infrastructure, and export networks, persistent challenges related to standardization, transparency, and global

acceptance continue to hinder China's ability to fully capitalize on this lucrative sector.

One of the most pressing issues remains the lack of a unified halal certification system. Unlike Malaysia or Indonesia, where centralized religious authorities govern halal compliance, China's certification process is fragmented across provincial agencies and the China Islamic Association (CIA), leading to inconsistencies that erode international confidence (Li & Ismail, 2021). This fragmentation not only complicates domestic enforcement but also raises skepticism among key export partners in the Middle East and Southeast Asia, where consumers and regulators demand stringent adherence to Islamic standards (Baharuddin et al., 2015). Additionally, incidents of fraudulent halal labeling and supply chain contamination have further damaged trust, underscoring the need for more robust oversight and technological solutions (Abdul et al., 2023).

To address these challenges, China must prioritize regulatory harmonization and technological integration. The establishment of a National Halal Authority could centralize certification processes, ensuring alignment with global standards such as those set by the Organisation of Islamic Cooperation (OIC) (Riaz & Chaudry, 2018). Concurrently, investments in blockchain traceability, IoT-enabled logistics, and AI-driven compliance monitoring would enhance transparency across the supply chain, from sourcing to retail (Yang, 2019). For instance, blockchain pilots in Ningxia have demonstrated how immutable ledgers can verify halal authenticity, while IoT sensors in cold chain networks can prevent spoilage and cross-contamination (Hussain et al., 2020). These innovations, coupled with BRI-driven trade corridors, could streamline halal exports to Muslim-majority markets, reinforcing China's role as a reliable supplier (Zhang & Guo, 2022).

Looking ahead, future research should explore two critical areas: consumer trust-building strategies and the impact of digitalization on HSCM. Studies focusing on consumer perceptions—particularly in import-dependent markets like Malaysia and the UAE—could identify gaps in China's halal branding and certification credibility (Baharuddin et al., 2015). Additionally, as digital tools like blockchain and AI become more prevalent, their long-term effects on supply chain efficiency, cost reduction, and fraud prevention warrant deeper analysis (Abdul et al., 2023). Policymakers must also consider socio-cultural dimensions, ensuring that halal regulations respect Islamic jurisprudence while accommodating China's unique regulatory environment (Li & Ismail, 2021).

In conclusion, while China's halal supply chain has made remarkable strides, its future success hinges on overcoming structural and perceptual barriers. By adopting advanced technologies, harmonizing regulations, and fostering international collaboration, China can solidify its position as a leading halal supplier. The integration of these measures will not only boost export competitiveness but also enhance the integrity of the global halal market, benefiting consumers and producers alike.

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