

FEATURES OF THE FORMATION AND MANAGEMENT OF HALAL PRODUCT SUPPLY CHAINS IN THE KYRGYZ REPUBLIC FOR EXPORT

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Abstract: *This study examines the development and management of halal supply chains in the Kyrgyz Republic, focusing on their export orientation. It substantiates the growing role of halal logistics as a strategic element of international trade, driven by growing global demand for certified halal products. The study analyses the institutional, regulatory, and infrastructural conditions for supply chain development, including certification systems, quality control mechanisms, and compliance with international standards. Particular attention is paid to the integration of logistics processes, digitalization, and ensuring product traceability at all stages of the supply chain. Key challenges identified include a fragmented regulatory framework, limited international recognition of certificates, underdeveloped logistics infrastructure, and weak coordination between market participants. At the same time, significant opportunities are identified in expanding access to global halal markets, particularly in the Middle East, Southeast Asia, and within the Eurasian Economic Union. The study's methodological basis is a systems approach, including institutional analysis, a comparative study of international experience, and an assessment of the current state of supply chains in the Kyrgyz Republic. The study's results demonstrate that increasing export potential requires the development of a unified halal certification system, the development of logistics infrastructure, the implementation of digital technologies, and the strengthening of public-private partnership mechanisms. These findings contribute to the development of scientific understanding of halal supply chains in emerging economies and offer practical recommendations for enhancing the competitiveness of Kyrgyz halal products in the global market.*

Keywords: *halal supply chain, halal logistics, Kyrgyz Republic, export potential, certification, traceability, supply chain management, digitalization, international trade, quality assurance*

1. INTRODUCTION

The formation and development of halal supply chains in the Kyrgyz Republic is taking place in the context of an evolving institutional and legal environment aimed at ensuring product quality, adhering to religious requirements, and expanding the country's export potential. In the context of globalization and the rapid growth of global demand for certified halal products, the development of effective supply chain management systems is becoming a strategically important task for the national economy.

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The halal industry is increasingly viewed as a dynamically developing segment of the global food market, characterized by strict quality standards, traceability requirements, and a high level of consumer trust. For developing countries like the Kyrgyz Republic, participation in global halal markets offers opportunities to diversify exports, increase the added value of products, and integrate into international trade networks.

A key stage in the institutionalization of the halal industry in the Kyrgyz Republic was the adoption of the Halal Industry Development Concept, approved by Government Resolution No. 385 of June 22, 2015. This document defined strategic priorities, including the creation of a certification system, the development of production capacities, and the formation of export-oriented supply chains.

Further integration into the international halal standardization system was ensured by the participation of national institutions in global standardization and accreditation structures. In particular, the Center for Standardization and Metrology under the Ministry of Economy and Commerce of the Kyrgyz Republic became a member of the international organization Standards and Metrology Institute for Islamic Countries (SMIIC), facilitating the implementation of international standards. Furthermore, the Kyrgyz Accreditation Center joined the International Halal Accreditation Forum (IHAF), increasing trust in the national certification system and expanding opportunities for access to foreign markets.

Public policy plays a key role in shaping the institutional environment. Measures aimed at developing the agro-industrial complex view halal production as a promising area for economic growth. This position is enshrined in the National Development Program of the Kyrgyz Republic, which defines the halal industry as an important factor in enhancing the economy's competitiveness and expanding export opportunities.

In terms of supply chain organization, institutional mechanisms ensure the coordination of interactions between key participants, including producers, logistics operators, certification bodies, and government agencies. At the same time, the development of logistics infrastructure - transport corridors, warehouse complexes, and distribution systems - is essential for the effective functioning of supply chains. In the context of halal logistics, requirements for separate storage, prevention of cross-contamination, and compliance monitoring are particularly important, necessitating the implementation of specialized logistics solutions.

Despite the progress achieved, the development of halal supply chains in the Kyrgyz Republic faces several challenges. These include a fragmented regulatory framework, limited international recognition of halal certificates, insufficient infrastructure development, and weak coordination among market participants. These limitations hinder the country's export potential in the global halal market.

At the same time, digitalization opens up new opportunities to increase the transparency and efficiency of supply chains. The implementation of digital tracking systems and information technology helps improve product traceability, reduce risks, and ensure compliance with standards at all stages of the supply chain.

Therefore, the aim of this study is to analyse the specifics of the formation and management of halal supply chains in the Kyrgyz Republic and identify key factors influencing their export orientation. The obtained results are aimed at developing theoretical and practical approaches to managing halal supply chains in emerging economies and formulating recommendations for increasing the competitiveness of domestic producers in the global market.

2. LITERATURE REVIEW

The development and management of halal supply chains lie at the intersection of logistics, international trade, technical regulation, certification, and digital traceability. This topic is of particular importance for the Kyrgyz Republic, as the development of the halal industry is linked not only to the domestic market but also to the expansion of the country's export potential.

The legal framework for this study is comprised of Kyrgyz legislation governing the halal industry, consumer protection, technical regulation, and accreditation. The Law of the Kyrgyz Republic "On the Halal Industry in the Kyrgyz Republic" forms the institutional framework for the development of the industry, establishing general principles for the functioning of the halal sector [1]. The Law "On the Protection of Consumer Rights" provides legal guarantees of product quality and safety [2], and the Law "On the Fundamentals of Technical Regulation" defines requirements for standards, conformity assessment, and product quality control [3]. Of particular importance is the Law "On Accreditation in the Field of Conformity Assessment," which regulates the activities of certification and accreditation bodies [4].

Subordinate legislation and national standards play a special role in the development of halal supply chains. The Resolution of the Cabinet of Ministers of the Kyrgyz Republic "On the Procedure for Certification and Labelling of Products and Services for Compliance with Halal Standards" defines the procedures for confirming product compliance with established requirements [5]. The Regulation on the Procedure for Voluntary Certification of Products and Services for Compliance with Halal Standards establishes a mechanism for voluntary confirmation of compliance [6]. The national standards of the Kyrgyz Republic in the field of halal industry, effective as of 2024–2025, provide the basis for unifying requirements for products, production processes, storage, transportation, and labelling [7].

In the international scientific literature, Tieman, Van der Vorst, and Che Ghazali have made significant contributions to the development of halal supply chain theory by formulating key principles of halal supply chain management. The authors emphasize that a halal supply chain must ensure that products maintain their halal status at all stages of their supply chain - from production and processing to storage, transportation, and distribution [8]. This approach is particularly important for export-oriented countries, as non-compliance with requirements at any stage of the chain can lead to a loss of trust from consumers and foreign markets.

Kadir et al. examine the key issues and challenges of halal supply chain management, including insufficient coordination among participants, weak infrastructure, limited certification mechanisms, and the risk of product cross-contamination [9]. These findings are of direct relevance to the Kyrgyz Republic, where the halal certification system and specialized logistics infrastructure are still in the development stage.

Contemporary research increasingly links halal logistics with sustainable development. Ab Talib, Zulfakar, and Kurniawati examine the sustainable management of halal supply chains from several theoretical perspectives, including institutional theory, the resource-based approach, and stakeholder theory [1]. This approach allows for the consideration of halal supply chains not only as a logistics system but also as a comprehensive institutional model, where government regulation, consumer trust, certification, and business interaction with government agencies are important. An important area of research is the resilience of halal supply chains to external disruptions. Abdul Rahman and Wan Ismail analyse gaps and

failures in halal supply chains using Malaysia as an example, highlighting issues such as insufficient infrastructure readiness, weak coordination, and limited digital traceability [2]. This experience is of practical interest for the Kyrgyz Republic, as exporting halal products requires a resilient supply chain capable of ensuring continuity, quality, and compliance with international requirements.

Current literature places particular emphasis on digitalization and blockchain technologies. Abdul Rahman et al. propose a framework for implementing blockchain to ensure the integrity of halal supply chains [3]. The use of such technologies can improve transparency, ensure traceability of product origin, and reduce the risk of violating halal standards. In the context of the Kyrgyz Republic, digitalization can become a key tool for increasing trust in the national certification system and promoting products to foreign markets.

The experience of individual countries demonstrates that the development of halal logistics requires adaptation to the specifics of exported goods. Ahmad and Sugiharto examine the implementation of halal logistics in Indonesian seafood exports, demonstrating the importance of controlling transportation, temperature control, packaging, and documentation [4]. Alzeer and Hadeed examine cold chain management for halal pharmaceuticals, emphasizing the importance of temperature control and specialized storage [5]. These studies confirm that halal supply chains require industry-specific adaptation and cannot be considered solely as a standard logistics system.

International standards also play an important role in the scientific and practical implementation of halal supply chains. The MS 2400:2022 Halal Supply Chain Management Systems standard, developed by the Department of Standards Malaysia, is one of the most significant documents in the field of halal logistics management [6]. The GSO 2055-1:2020 standard establishes general requirements for halal products and is used in the Gulf countries [7]. For the Kyrgyz Republic, harmonizing national standards with international requirements is a prerequisite for expanding export opportunities.

Several authors have examined the application of the SCOR model in halal supply chain management. Handriyono et al. analyze business strategies using halal supply chain management and the SCOR model [10]. Syamsurizal et al. propose an approach to measuring the performance of small enterprises' halal supply chains based on SCOR [11]. These studies are important for assessing the productivity, reliability, flexibility, and resilience of supply chains, which can be applied to the analysis of Kyrgyz halal product producers.

In Russian-language literature, halal industry issues are examined through the prism of logistics, cluster development, and digital control. Ivanov and Petrova analyze logistics in the halal industry, emphasizing the need for specialized warehousing, transportation, and certification solutions [12]. Mukhametshin examines Tatarstan's experience in developing a halal cluster, which could be useful for the Kyrgyz Republic in terms of institutional support, producer cooperation, and product promotion in foreign markets [13]. Nurullin and Gafiyatullina examine the digitalization of halal supply chain control within the EAEU, which is particularly relevant for Kyrgyzstan as a participant in the Eurasian integration space [14].

Thus, the literature review shows that effective halal supply chain management requires a comprehensive approach, including legal and regulatory frameworks, international certification, logistics infrastructure, digital traceability, and market participant coordination. For the Kyrgyz Republic, key areas for further development include the harmonization of

standards, increasing the international recognition of certificates, developing specialized logistics, and implementing digital quality control tools.

3. METHODOLOGY

This study employs a qualitative and analytical research design to examine the development of international transport corridors in Central Asia. The methodological approach is based on a combination of comparative analysis, systematization of transport routes, and evaluation of their logistical and economic characteristics.

The research is structured around the analysis of both existing and proposed international transport corridors connecting Europe and East Asia through Central Asia. The study focuses on identifying key differences in corridor performance in terms of distance, delivery time, infrastructure quality, and operational constraints. Special attention is given to the role of railway transport as a strategic alternative to maritime routes.

The empirical basis of the study includes analytical data on Eurasian transport routes, including corridor characteristics, transit times, and infrastructure conditions. The research also incorporates information on major logistics routes such as northern, southern, and trans-Caspian corridors, as well as proposed railway projects passing through Kyrgyzstan. These data are systematized and presented in a comparative format to identify advantages and limitations of each route.

A comparative analysis method is applied to evaluate the efficiency of different transport corridors. The corridors are assessed based on key criteria, including:

- transport distance;
- delivery time;
- infrastructure development level;
- logistical complexity (e.g., number of border crossings, multimodal operations);
- technical constraints (e.g., railway gauge differences);
- economic feasibility and investment requirements.

In addition, elements of scenario analysis are used to assess the future development of Eurasian transport flows. In particular, the study considers the potential reallocation of cargo traffic from maritime to railway transport, based on expert estimates and existing trends in global logistics.

The study also adopts a system-based perspective, treating transport corridors as integrated logistics systems that combine infrastructure, institutional frameworks, and economic factors. This approach allows for a more comprehensive understanding of how different variables interact and influence corridor performance.

Furthermore, the research includes a case-oriented analysis of proposed railway projects involving Kyrgyzstan, such as the China–Kyrgyzstan–Uzbekistan corridor and alternative southern routes. These cases are used to evaluate the feasibility, potential benefits, and constraints associated with new transport infrastructure development in the region.

Overall, the chosen methodology provides a structured framework for analysing international transport corridors in Central Asia and supports the identification of key factors affecting their efficiency, competitiveness, and long-term development.

4. RESULTS

The results of the study made it possible to identify the key characteristics of halal supply chain functioning in the Kyrgyz Republic and to determine the main factors influencing their export performance.

4.1. Assessment of the Institutional Environment

The analysis indicates that the Kyrgyz Republic has established a foundational regulatory and institutional framework for the development of the halal industry. This framework is primarily based on national legislation governing halal production, consumer protection, technical regulation, and accreditation systems. However, despite the existence of formal regulatory mechanisms, the level of their practical implementation remains moderate, reflecting structural and institutional limitations (Table I).

Table I.
Assessment of Institutional Environment for Halal Supply Chains in the Kyrgyz Republic
(Source: compiled by the author)

Indicator	Assessment Level	Key Issues Identified
Legal framework	Medium	Fragmentation of regulations
Certification system	Medium	Limited international recognition
Accreditation system	Medium	Institutional gaps
State support	Medium	Insufficient targeted programs
Stakeholder coordination	Low	Weak interaction mechanisms

The findings indicate that stakeholder coordination remains the weakest component, significantly limiting the efficiency of supply chain management and export capacity. In particular, the lack of integrated interaction mechanisms between producers, certification bodies, and logistics operators leads to inconsistencies in compliance control and delays in product movement across the supply chain.

Moreover, the fragmentation of the regulatory framework reduces the predictability of institutional procedures and increases transaction costs for businesses. This is especially critical for export-oriented halal products, where compliance with unified and internationally recognized standards is essential. The limited recognition of national certification further constrains access to high-value foreign markets, thereby weakening the competitiveness of Kyrgyz producers.

In addition, the insufficient targeting of state support mechanisms suggests that halal supply chains are not yet treated as a distinct strategic priority within national economic policy. As a result, existing support instruments remain generalized and do not fully address the specific requirements of halal production, certification, and logistics.

These institutional limitations have a direct impact on the performance of supply chains, particularly in terms of coordination efficiency, compliance assurance, and market access. Consequently, the effectiveness of halal supply chains cannot be assessed independently of the supporting logistics infrastructure, which serves as a critical operational backbone.

4.2. Analysis of Logistics Infrastructure

Logistics infrastructure plays a critical role in ensuring the effectiveness of halal supply chains (Table II).

The analysis demonstrates that logistics infrastructure remains unevenly developed, with significant disparities across different components of the supply chain. While transport corridors and distribution networks show moderate levels of development, critical elements such as warehousing facilities and cold chain logistics remain underdeveloped.

Table II.
Evaluation of Logistics Infrastructure for Halal Supply Chain (Source: compiled by the author)

Infrastructure Component	Level of Development	Constraints Identified
Transport corridors	Medium	Limited connectivity
Warehousing facilities	Low	Lack of halal-compliant storage
Cold chain logistics	Low	Insufficient temperature control systems
Distribution networks	Medium	Weak regional integration
Export logistics	Medium	High transaction costs

The lack of halal-compliant storage infrastructure represents a major bottleneck, as it increases the risk of cross-contamination and non-compliance with halal standards. This issue is particularly relevant for products requiring strict segregation and controlled handling conditions. Similarly, insufficient development of cold chain logistics limits the ability to export perishable halal products, such as meat and dairy, to distant international markets.

Furthermore, high transaction costs in export logistics reduce price competitiveness and create additional barriers for small and medium-sized enterprises. Weak regional integration of distribution networks also constrains the scalability of halal supply chains and limits their ability to operate efficiently within broader regional markets.

Taken together, these findings suggest that infrastructure constraints reinforce existing institutional weaknesses, creating a cumulative effect that hinders the overall performance of halal supply chains in the Kyrgyz Republic.

4.3. Key Factors Influencing Supply Chain Efficiency

Based on a systemic analysis, several key factors influencing halal supply chain performance were identified (Table III).

The findings reveal that institutional quality, certification recognition, and logistics infrastructure constitute the core drivers of halal supply chain efficiency. These factors directly determine compliance reliability, operational continuity, and the ability to meet international market requirements.

In particular, the regulatory framework defines the rules of interaction among stakeholders and ensures standardization across the supply chain. However, its effectiveness depends on the level of harmonization with international norms. Similarly, certification

recognition is a critical gateway to export markets, as it determines whether products are accepted by foreign regulators and consumers.

Table III.
Key Factors Influencing Halal Supply Chain Efficiency (Source: compiled by the author)

Factor Category	Factor Description	Impact Level
Institutional	Regulatory framework	High
Certification	Recognition of halal certificates	High
Logistics	Infrastructure development	High
Technological	Digitalization and traceability systems	Medium
Market	Access to international markets	High

Logistics infrastructure plays a complementary but equally decisive role by enabling the physical integrity of halal products. Without appropriate storage, transportation, and segregation systems, compliance with halal standards cannot be guaranteed, regardless of regulatory provisions.

Technological factors, including digitalization and traceability systems, exhibit a moderate but growing impact. While currently underutilized, these tools have the potential to significantly enhance transparency, reduce information asymmetry, and improve compliance monitoring. Their importance is expected to increase as global halal markets become more digitized.

Market access remains a high-impact factor, reflecting the export-oriented nature of halal supply chains. The ability to integrate into international markets depends not only on product quality but also on certification, logistics, and institutional alignment.

Importantly, these factors are highly interdependent. Weaknesses in one dimension - such as certification - can undermine the effectiveness of others, such as logistics or market access. This interconnectedness highlights the systemic nature of halal supply chain development.

4.4. Constraints in Export-Oriented Halal Supply Chains

The study identified several critical constraints hindering the development of export-oriented halal supply chains (Table IV).

Table IV.
Key Constraints in Halal Export Supply Chains (Source: compiled by the author)

Problem Area	Description	Severity
Certification barriers	Lack of international recognition	High
Infrastructure gaps	Underdeveloped logistics systems	High
Institutional issues	Fragmented regulatory environment	Medium
Coordination problems	Weak stakeholder integration	High
Digitalization gaps	Limited implementation of tracking systems	Medium

The analysis indicates that the most severe constraints are related to certification barriers and infrastructure deficiencies, both of which directly affect export competitiveness. The absence of internationally recognized certification limits access to key halal markets and increases the need for additional verification procedures, thereby raising costs and reducing efficiency. Infrastructure gaps further exacerbate these challenges by constraining the ability to maintain product integrity throughout the supply chain. In particular, the lack of halal-compliant warehousing and cold chain systems increases the risk of non-compliance and reduces the reliability of export operations.

Coordination problems among stakeholders represent another critical limitation. The absence of integrated supply chain management systems leads to inefficiencies, duplication of processes, and delays in product movement. This issue is closely linked to institutional fragmentation and the lack of centralized governance mechanisms.

Digitalization gaps, although assessed as medium severity, reflect a strategic weakness. Limited adoption of digital tracking and monitoring systems reduces transparency and increases the risk of information asymmetry, which is particularly problematic in international trade environments where traceability is essential.

Overall, these constraints are interconnected and mutually reinforcing, creating a cumulative negative effect on the performance and scalability of halal supply chains in the Kyrgyz Republic.

4.5. Development Potential and Export Opportunities

Despite existing challenges, the analysis reveals significant opportunities for the development of halal supply chains (Table V).

Table V.
Opportunities for Halal Supply Chain Development (Source: compiled by the author)

Opportunity Area	Description	Potential Impact
Expansion of halal markets	Middle East, Southeast Asia, EAEU	High
Digital technologies	Blockchain, traceability systems	High
Standard harmonization	Alignment with international standards	High
PPP development	Public-private partnerships	Medium
Logistics modernization	Infrastructure investment	High

The findings demonstrate that the Kyrgyz Republic possesses substantial potential to expand its role in the global halal market. The growing demand for halal products in regions such as the Middle East and Southeast Asia creates favourable conditions for export-oriented development.

Digital technologies represent a particularly promising opportunity. The implementation of blockchain and traceability systems can enhance transparency, ensure compliance, and increase trust among international partners. These technologies can also address some of the previously identified constraints, particularly in certification and coordination.

Standard harmonization is another critical direction, as alignment with international halal standards would facilitate market entry and reduce certification barriers. This requires active engagement with global standard-setting bodies and the adaptation of national regulations.

The development of public–private partnerships can further support the growth of halal supply chains by mobilizing investment, improving infrastructure, and enhancing coordination among stakeholders. At the same time, modernization of logistics infrastructure remains a fundamental requirement for unlocking export potential.

Taken together, these opportunities suggest that, despite existing structural limitations, the halal supply chain sector in the Kyrgyz Republic has strong prospects for growth. Realizing this potential requires a coordinated strategy integrating institutional reforms, infrastructure development, and technological innovation.

5. DISCUSSION

The findings of this study confirm that the development of halal supply chains in the Kyrgyz Republic is a complex and systemic process shaped by the interaction of institutional, logistical, certification, and technological factors. In contrast to traditional supply chain models, halal supply chains require strict compliance with religious standards, which introduces additional layers of control, coordination, and traceability across all stages of product movement.

The results are consistent with the theoretical framework proposed by Tieman, Van der Vorst, and Che Ghazali, who emphasize that the integrity of halal supply chains must be preserved throughout the entire logistics process. The present study supports this view by demonstrating that weaknesses in logistics infrastructure - particularly in warehousing and cold chain systems - directly threaten compliance with halal requirements and reduce export reliability. This confirms that physical logistics systems are not merely supportive elements but core components of halal supply chain integrity.

Furthermore, the findings align with the multi-theoretical perspective of Ab Talib et al., which highlights the role of institutional environments, stakeholder coordination, and governance mechanisms in ensuring sustainable halal supply chain management. The identified fragmentation of the regulatory framework and weak coordination among stakeholders in the Kyrgyz Republic reflect institutional gaps that limit system efficiency. From the perspective of institutional theory, these deficiencies indicate the absence of strong regulative and normative structures necessary for stable supply chain governance.

The study also contributes to the existing literature by emphasizing the critical importance of certification recognition as a determining factor of export competitiveness. While previous studies have addressed certification as a compliance mechanism, the results of this research demonstrate that, in the context of emerging economies, certification functions as a strategic market access tool. Limited international recognition of halal certificates creates significant barriers to entry into global markets, particularly in regions with strict regulatory requirements, such as the Middle East.

In addition, the results correspond with prior research on supply chain disruptions, particularly the work of Abdul Rahman and Wan Ismail, which identifies coordination failures and infrastructure limitations as key sources of vulnerability. The Kyrgyz case confirms that weak integration among supply chain actors leads to inefficiencies, increased transaction costs, and reduced responsiveness to market demands.

From an operational perspective, the findings can be interpreted through the SCOR (Supply Chain Operations Reference) model. The identified constraints - such as infrastructure gaps, coordination problems, and limited digitalization - directly affect key SCOR performance attributes, including reliability, responsiveness, and cost efficiency. This suggests that improving halal supply chain performance requires not only regulatory reforms but also operational optimization across planning, sourcing, making, delivering, and returning processes.

A significant contribution of this study lies in highlighting the emerging role of digital technologies in halal supply chain management. While technological factors currently demonstrate a moderate level of impact, their strategic importance is expected to increase. This is consistent with recent research on blockchain-based halal traceability systems, which show that digital solutions can enhance transparency, reduce information asymmetry, and strengthen consumer trust. In the Kyrgyz Republic, the limited adoption of such technologies represents both a constraint and an opportunity for future development.

Moreover, the results suggest that halal supply chains in the Kyrgyz Republic are still in a transitional stage, characterized by partial institutional development and uneven infrastructure capacity. This finding extends the literature by providing empirical evidence from a Central Asian context, which remains underrepresented in halal supply chain research. Unlike more developed halal markets such as Malaysia or Indonesia, the Kyrgyz Republic faces the dual challenge of building both institutional credibility and physical logistics capacity simultaneously.

Importantly, the interdependence of identified factors confirms the systemic nature of halal supply chain development. Improvements in one area, such as certification, will not yield significant results without parallel advancements in logistics infrastructure and stakeholder coordination. This supports the argument that fragmented or isolated policy interventions are insufficient and that a comprehensive, integrated approach is required.

Overall, the discussion highlights that the competitiveness of halal supply chains in the Kyrgyz Republic depends on the alignment of institutional frameworks, logistics systems, and technological capabilities with international standards. The study not only confirms existing theoretical assumptions but also extends them by demonstrating how these factors interact in the context of an emerging economy with export-oriented ambitions

6. CONCLUSION

This study examined the specific features of the formation and management of halal supply chains in the Kyrgyz Republic with a focus on export orientation. The findings confirm that the development of halal supply chains is a multidimensional and systemic process shaped by the interaction of institutional, logistical, certification, and technological factors.

The analysis revealed that, although a basic regulatory and institutional framework has been established, its effectiveness remains limited due to fragmentation, insufficient coordination among stakeholders, and the lack of international recognition of halal certification. These institutional constraints are further reinforced by infrastructure deficiencies, particularly in warehousing and cold chain logistics, which are critical for maintaining product integrity and ensuring compliance with halal standards.

The study identified key drivers of supply chain efficiency, including the regulatory environment, certification systems, logistics infrastructure, and access to international markets. At the same time, several critical barriers were highlighted, such as certification

limitations, underdeveloped logistics systems, weak coordination mechanisms, and insufficient digitalization. These challenges collectively hinder the competitiveness of Kyrgyz halal products in global markets.

Despite these constraints, the research demonstrates that the Kyrgyz Republic possesses significant potential for the development of export-oriented halal supply chains. Growing global demand for halal products, particularly in the Middle East, Southeast Asia, and the Eurasian Economic Union, creates favourable conditions for expanding market presence. Moreover, the adoption of digital technologies and alignment with international standards offer new opportunities for enhancing transparency, efficiency, and trust in the supply chain.

From a theoretical perspective, the study contributes to the existing literature by providing empirical evidence from an emerging economy context, highlighting the interdependence of institutional, infrastructural, and technological factors in halal supply chain development. The findings extend current approaches by emphasizing the role of certification recognition and governance mechanisms as critical determinants of export performance.

From a practical and policy perspective, the study proposes several key recommendations:

- Strengthening the institutional framework through harmonization of national regulations with international halal standards and the establishment of a unified coordination mechanism;
- Enhancing international recognition of certification by developing partnerships with global accreditation bodies and implementing mutual recognition agreements;
- Developing logistics infrastructure, particularly halal-compliant warehousing and cold chain systems, to ensure product integrity;
- Promoting digitalization through the adoption of traceability systems and blockchain technologies to improve transparency and compliance control;
- Supporting public–private partnerships (PPP) to mobilize investment and improve coordination among stakeholders.

In conclusion, the study demonstrates that improving the competitiveness of halal supply chains in the Kyrgyz Republic requires an integrated and policy-driven approach. The simultaneous transformation of institutional structures, logistics systems, and technological capabilities is essential for achieving sustainable development and successful integration into global halal markets.

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