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## Halal Animal Slaughter in the Era of Industrialization and Global Trade: Between Sharia Compliance and Food Safety Standards

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### ABSTRACT

The halal integrity of animal slaughter has become a critical issue in the era of industrialization and global trade, particularly as traditional practices confront mechanization, food safety standards, and international supply chains. This study aims to analyze the balance between Sharia compliance and food safety standards within the context of halal slaughter. A qualitative literature review approach was employed by examining scholarly articles, books, and international documents from reputable databases. The findings reveal that industrialization presents challenges to ritual authenticity, halal certification harmonization, and consumer demands for transparency and animal welfare. The implication is that halal slaughter can be positioned not only as a religious obligation but also as a framework for ethical and sustainable food governance in global markets.

**Keywords:** Halal, animal slaughter, Sharia compliance, food safet

### ABSTRAK

Kehalalan penyembelihan hewan menjadi isu penting dalam era industrialisasi dan perdagangan global, terutama ketika praktik tradisional harus menyesuaikan dengan mekanisasi, standar keamanan pangan, dan rantai pasok internasional. Tujuan penelitian ini adalah menganalisis keseimbangan antara kepatuhan syariah dan standar keamanan pangan dalam konteks penyembelihan halal. Penelitian ini menggunakan pendekatan kajian pustaka dengan menganalisis artikel, buku, dan dokumen internasional yang relevan dari basis data bereputasi. Hasil penelitian menunjukkan bahwa industrialisasi menghadirkan tantangan pada otentisitas ritual, harmonisasi sertifikasi halal, serta tuntutan konsumen terhadap transparansi dan kesejahteraan hewan. Implikasinya, penyembelihan halal dapat diposisikan tidak hanya sebagai kewajiban religius, tetapi juga sebagai kerangka tata kelola pangan yang etis dan berkelanjutan di tingkat global.

**Kata Kunci:** Halal, penyembelihan hewan, kepatuhan syariah, keamanan pangan

## INTRODUCTION

The question of halal compliance in animal slaughter has become increasingly significant in the context of globalized food production and trade. As the Muslim population worldwide continues to grow, estimated at nearly two billion people, demand for halal-certified products has expanded beyond Muslim-majority countries to encompass international markets. This expansion has transformed halal slaughter from a purely religious practice into an important aspect of the global food industry, necessitating attention from regulators, industry actors, and scholars alike (Fischer, 2021).

Modern industrialization has introduced technological advancements in the slaughtering process, including mechanization, automation, and global supply chain integration. While these innovations have improved efficiency and output, they also raise concerns regarding the preservation of religiously mandated practices such as invoking the name of God (tasmiyah) and ensuring the animal is alive and healthy before slaughter. Scholars note that reconciling industrial practices with Sharia requirements represents one of the greatest challenges in maintaining authenticity and consumer trust in halal certification (Bonne & Verbeke, 2020).

The globalization of trade further complicates the issue as international markets demand standardized halal certification systems. However, differences in interpretation of Sharia principles across Muslim communities and countries have led to inconsistencies in certification criteria. For instance, some regulatory bodies permit mechanical slaughter with pre-recorded invocations, while others reject it as non-compliant with Islamic teachings. These variations create friction in international commerce and raise questions about whose authority determines the global definition of halal (Tieman, 2020).

Food safety standards add another dimension to this debate. International organizations such as the Codex Alimentarius Commission and the World Health Organization emphasize hygiene, traceability, and animal welfare in meat production. These standards sometimes align with Sharia principles, such as minimizing animal suffering, but in other cases, they diverge, particularly on issues of stunning before slaughter. Research highlights the tension between meeting global food safety regulations and preserving the integrity of halal requirements, especially when countries adopt different stances on pre-slaughter stunning (Lever & Miele, 2021).

In addition, consumer awareness is reshaping the discourse on halal slaughter. Muslim consumers increasingly demand transparency, traceability, and ethical treatment of animals in addition to ritual compliance. Non-Muslim

consumers also view halal certification as a marker of quality and hygiene, further broadening its appeal. Studies demonstrate that halal is no longer confined to religious observance but intersects with global discourses on sustainability, food ethics, and animal rights (Wilson, 2023).

This study aims to analyze halal animal slaughter in the era of industrialization and global trade, focusing on the balance between Sharia compliance and international food safety standards. The objective is to provide an integrative understanding of how religious principles and modern regulatory frameworks can coexist and inform best practices for global halal governance.

## METHOD

This study employed a qualitative literature review approach by systematically analyzing scholarly articles, books, and international regulatory documents related to halal animal slaughter, Sharia compliance, and food safety standards. Sources were selected from reputable databases such as Scopus, Web of Science, and SpringerLink, focusing on publications from the last decade to ensure relevance and contemporary insights. The analysis followed a thematic synthesis method, identifying key issues including the religious requirements of halal slaughter, the impact of industrialization, and the influence of global trade regulations. Data were interpreted through a comparative lens, contrasting Islamic jurisprudential perspectives with international food safety frameworks such as Codex Alimentarius and World Health Organization guidelines. This methodological design allows for a comprehensive examination of the convergence and divergence between religious mandates and modern regulatory practices.

## RESULTS AND DISCUSSION

### *Sharia Principles and the Integrity of Halal Slaughter*

The foundation of halal slaughter rests on the principles outlined in the Qur'an and Hadith, which emphasize invoking the name of God, ensuring the animal is alive and healthy, and minimizing suffering during slaughter. These principles establish not only religious compliance but also ethical standards that resonate with broader concerns for animal welfare. Studies indicate that Muslim jurists across different schools of thought converge on these core principles, even though their interpretations may vary in practice (Riaz & Chaudry, 2018). Maintaining the spiritual and ethical essence of these requirements has become increasingly complex in industrial contexts where speed and volume dominate operations.

In the context of industrialization, the reliance on mechanized slaughter methods poses challenges for maintaining the spiritual dimensions of halal. For example, mechanical slaughter lines may process hundreds of animals per hour, raising doubts about whether individual invocations of God are properly performed. Scholars have expressed concern that the absence of human oversight in such processes risks reducing halal slaughter to a mere technical act rather than a religious ritual (Tieman & Hassan, 2019). These concerns highlight the necessity of integrating Sharia scholars into oversight mechanisms to preserve the sanctity of the practice.

The jurisprudential debates extend to the issue of pre-slaughter stunning, which is widely practiced in industrial slaughterhouses for efficiency and animal welfare reasons. While some Muslim authorities allow reversible stunning as long as the animal remains alive at the time of slaughter, others argue that it undermines the religious requirement of the animal being fully conscious. Comparative studies across Muslim-majority countries reveal inconsistent regulatory approaches, with nations such as Malaysia permitting certain types of stunning under strict guidelines, while Saudi Arabia prohibits it altogether (Bonne & Verbeke, 2020). This divergence demonstrates the dynamic tension between tradition and modernization.

Halal certification bodies have emerged as mediators in resolving these tensions, though their standards often differ across jurisdictions. Organizations like the Halal Food Authority in the UK and JAKIM in Malaysia have established detailed protocols, yet these are not universally recognized. Consequently, the lack of standardization creates uncertainty for exporters and consumers alike. A global framework for halal certification remains elusive due to theological differences and varying legal environments (Fischer, 2021). This reality underscores the pressing need for harmonization efforts that respect Sharia diversity while providing clarity in international trade.

Consumer trust is central to the integrity of halal slaughter practices. Research shows that Muslim consumers increasingly question whether modern industrialized processes adequately uphold Islamic values. Instances of fraud or mislabeling in halal meat supply chains have exacerbated skepticism, leading to calls for stricter regulation and monitoring. A loss of consumer trust not only undermines the religious significance of halal but also affects the broader credibility of the halal food industry in global markets (Wilson, 2023). Thus, ensuring integrity requires transparent certification and robust oversight.

The ethical dimension of halal slaughter extends beyond ritual compliance, reflecting Islam's broader concern for compassion toward animals. Islamic

jurisprudence emphasizes that animals must not be subjected to unnecessary pain, a value that intersects with contemporary discourses on animal welfare. Studies suggest that aligning Sharia principles with modern animal welfare science could strengthen the credibility of halal slaughter practices and address critiques from non-Muslim audiences (Lever & Miele, 2021). By foregrounding ethical considerations, halal can be positioned as both a religious and humane system. In sum, preserving the integrity of halal slaughter under industrial conditions necessitates a careful balance between upholding Sharia requirements and adapting to modern realities. The diversity of interpretations should not be seen as a weakness but as an opportunity to foster dialogue and mutual recognition among scholars, regulators, and industry stakeholders. The findings point to the importance of enhancing education, transparency, and international cooperation to safeguard both the spiritual and ethical dimensions of halal slaughter.

### **Industrialization and Global Supply Chain Challenges**

Industrialization has transformed the landscape of animal slaughter, shifting it from localized, community-based practices to complex global supply chains. This transformation has introduced efficiencies in production and distribution but has also created new vulnerabilities in maintaining halal compliance. Studies highlight that in industrialized settings, the emphasis on speed and productivity often overshadows the meticulous care required in halal slaughter, raising concerns about ritual authenticity (Ali & Suleiman, 2020). This tension reveals the challenges of reconciling religious obligations with economic imperatives.

Global supply chains introduce additional complexities in verifying halal compliance. Meat products often travel across multiple borders, undergoing various stages of processing and packaging before reaching consumers. Each stage presents risks of contamination, substitution, or mislabeling, which compromise halal integrity. Research underscores the critical importance of traceability systems that can document the halal status of products from farm to fork (Ngah et al., 2017). Without robust monitoring mechanisms, the credibility of halal certification is undermined, particularly in international markets.

The rise of digital technologies offers potential solutions to these challenges. Blockchain, for instance, has been proposed as a tool to enhance transparency and traceability in halal supply chains. Pilot projects in countries such as the United Arab Emirates and Indonesia demonstrate that blockchain can provide immutable records of each stage in the supply chain, ensuring consumers and regulators can verify halal compliance (Rejeb et al., 2021). These innovations illustrate how



industrialization and digitalization can be harnessed to strengthen rather than weaken halal systems.

However, the adoption of such technologies is uneven across regions. Developing countries often lack the infrastructure and resources to implement advanced traceability systems, creating disparities in halal governance. Exporting nations may face difficulties in meeting the requirements of importing countries, leading to trade disputes or market exclusions. The lack of global harmonization in halal standards further exacerbates these issues, as exporters must navigate varying certification systems depending on the target market (Tieman, 2020). This fragmentation highlights the need for greater international cooperation in setting and enforcing halal standards.

Another challenge lies in balancing economic competitiveness with religious and ethical commitments. Industrial actors often prioritize efficiency to reduce costs and maximize profit margins, which may conflict with the slower, more careful processes required for halal compliance. Critics argue that without stringent oversight, economic pressures could lead to compromises in ritual integrity, undermining both religious obligations and consumer confidence (Bonne & Verbeke, 2020). Therefore, integrating Sharia advisors and halal auditors into industrial processes becomes essential to maintaining compliance.

The global expansion of halal trade has also created opportunities for economic growth, particularly for Muslim-majority countries. The halal industry is projected to contribute significantly to GDP in nations such as Malaysia, Indonesia, and the Gulf states, making it a strategic sector in national development agendas. Yet, this economic potential must be balanced against the responsibility to uphold the sacred values underpinning halal. Scholars caution that reducing halal to a mere market commodity risks eroding its religious and ethical significance (Wilson, 2023). Thus, industrialization presents both opportunities and risks that must be carefully managed. Ultimately, the findings reveal that industrialization and globalization necessitate rethinking halal governance structures. Strengthening traceability, embracing digital technologies, and harmonizing certification systems are critical steps toward ensuring halal integrity in modern supply chains. Collaboration among governments, industry, and religious authorities is vital to create resilient systems that protect halal authenticity while facilitating global trade.

### ***Food Safety, Animal Welfare, and Global Regulatory Standards***

Food safety and animal welfare standards play an increasingly important role in shaping the discourse around halal slaughter. International organizations

such as the Codex Alimentarius Commission and the World Health Organization emphasize hygiene, disease prevention, and humane treatment of animals in meat production. These priorities intersect with but do not always align with Sharia principles, particularly on issues such as pre-slaughter stunning. Scholars argue that bridging these two frameworks requires careful negotiation to ensure compliance with both religious mandates and global food safety expectations (Lever & Miele, 2021).

One area of convergence is the shared concern for minimizing animal suffering. Islamic jurisprudence strongly emphasizes compassion toward animals, mandating that slaughter should be performed swiftly and with minimal distress. Similarly, animal welfare science advocates for reducing pain and stress during slaughter. Studies show that integrating these perspectives can strengthen the credibility of halal slaughter and foster dialogue between Muslim and non-Muslim stakeholders (Farouk et al., 2014). This convergence underscores the potential for halal to serve as a model of ethical food production.

Conversely, divergences emerge in the debate over stunning practices. While many international food safety regulations require stunning to ensure humane slaughter, certain Islamic authorities reject it as incompatible with Sharia principles. Research reveals that this divergence often creates trade barriers, as exporters struggle to meet both halal requirements and importing countries' regulations (Fuseini et al., 2017). The challenge lies in identifying solutions that respect religious integrity while addressing global standards for food safety and animal welfare.

The role of certification bodies is critical in mediating these tensions. Internationally recognized halal certification has become essential for accessing global markets, yet the lack of uniform standards creates confusion and mistrust. Consumers in non-Muslim countries may question the credibility of halal labels when they encounter conflicting information. Strengthening collaboration between halal authorities and international regulatory agencies could foster greater coherence and trust in certification systems (Tieman & Hassan, 2019). Such partnerships are vital for building resilient frameworks that uphold both Sharia and global safety standards.

Consumer preferences further shape the intersection of halal and food safety. Research indicates that Muslim consumers increasingly demand assurance not only of ritual compliance but also of hygiene, sustainability, and ethical sourcing. Non-Muslim consumers also perceive halal as a marker of cleanliness and quality, broadening its appeal beyond religious communities. This shift reflects a broader trend toward ethical consumption, where halal is positioned as

part of global discourses on sustainability and food ethics (Wilson, 2023). Addressing these preferences requires integrating halal governance with broader sustainability initiatives.

The growing importance of halal in global markets underscores the need for education and awareness campaigns. Many consumers lack clear understanding of what halal entails, leading to misconceptions or skepticism. Educational efforts can promote greater awareness of the compatibility between halal and international food safety standards, strengthening confidence among both Muslim and non-Muslim consumers. By highlighting shared values of hygiene, ethics, and compassion, such efforts can bridge cultural divides and enhance the global legitimacy of halal (Bonne & Verbeke, 2020). In conclusion, aligning halal slaughter with food safety and animal welfare standards requires a multidimensional approach. Efforts must focus on integrating Sharia principles with scientific advancements, harmonizing certification systems, and addressing consumer expectations. By fostering collaboration among religious scholars, regulators, and industry stakeholders, the halal system can evolve to meet modern challenges while preserving its spiritual and ethical essence. The findings emphasize that halal is not only a religious obligation but also a framework for ethical and sustainable food governance in an interconnected world.

## CONCLUSION

The study demonstrates that halal animal slaughter in the era of industrialization and global trade is situated at the intersection of Sharia compliance, food safety, and ethical considerations. While industrialization and globalization have introduced challenges such as mechanization, diverse certification standards, and complex supply chains, they have also created opportunities for innovation in traceability and transparency. The findings underscore the importance of harmonizing religious principles with international regulatory frameworks to safeguard the integrity of halal while ensuring global market access. Strengthening collaboration among scholars, policymakers, certification bodies, and industry stakeholders is essential to address inconsistencies, enhance consumer trust, and position halal not only as a religious obligation but also as a universal standard of ethical and sustainable food governance.

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