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Green Halal Industry: Integrating Halal Principles and Sustainability in Urban Development

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ABSTRACT

Twenty-first-century urban development requires a balance between economic growth, environmental sustainability, and social welfare. In this context, the halal industry has evolved not only as a means of fulfilling religious needs, but also as a strategic instrument for promoting sustainable urban economic transformation. This article aims to analyze the concept of the green halal industry and its relevance to sustainable urban development through the integration of halal principles, *thayyib*, and sustainability. The study employed a qualitative approach using the literature review method by examining scientific articles, policy reports, and academic publications related to halal supply chains, green industry, and urban sustainability. The analysis was conducted through theme identification, concept categorization, and critical interpretation of previous findings. The results indicate that the green halal industry has substantial potential to improve production efficiency, reduce waste, strengthen supply chain transparency, and enhance consumer trust. The integration of digital technologies such as the Internet of Things, blockchain, and big data further supports the implementation of adaptive and efficient halal systems in urban areas. In addition, this model can enhance the competitiveness of MSMEs, expand investment opportunities, and strengthen Indonesia's position in the global halal market. Nevertheless, its implementation still faces challenges, including limited business literacy, capital constraints, certification costs, and weak policy coordination. Therefore, collaboration among government, business sectors, and society is required to establish an inclusive and competitive green halal ecosystem. This article concludes that the green halal industry can serve as a new paradigm of urban development that integrates ethics, innovation, and sustainability.

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INTRODUCTION

Twenty-first-century urban development is no longer oriented solely toward economic growth, but also toward environmental sustainability and social welfare. Modern cities are expected to establish production systems that are efficient, low-emission, and responsible in the use of natural resources. In this context, the halal industry has emerged as a strategic sector that not only fulfills the religious needs of Muslim communities, but also responds to demands for product quality and safety. Previous studies indicate that the concept of green halal is increasingly viewed as an integration of halal principles and sustainability within contemporary industrial systems (Anisah, 2024: 120). A similar perspective emphasizes that halal values can operate in harmony with the sustainable development agenda (Hasanuddin, 2024: 6). Indonesia, as the country with the world's largest Muslim population, has substantial opportunities to develop this model in urban areas.

The continuing rise of urbanization in Indonesia has stimulated the growth of food, fashion, pharmaceutical, cosmetic, and other service consumption in urban regions. This growth has generated positive economic impacts, yet it has also created environmental pressures in the form of waste, pollution, and resource exploitation. Conventional industrial systems often remain unable to integrate production ethics and ecological efficiency simultaneously. Studies on halal supply chains in Indonesia confirm that halal industry development still focuses largely on final product certification rather than the sustainability of production processes as a whole (Putri et al., 2024: 101). Other findings also reveal the weak integration of sustainability within the national halal supply chain system (Dynamics of Halal Supply Chain Development, 2024: 17). These conditions demonstrate the need for transformation toward a greener and more systemic halal industry model.

The concept of the Green Halal Industry fundamentally combines halal principles, *thayyib*, and environmental responsibility within a single industrial framework. Halal ensures Sharia compliance, while *thayyib* emphasizes quality, safety, and benefits for both humanity and nature. In practice, this integration includes the use of environmentally friendly raw materials, energy efficiency, waste management, and sustainable distribution. Research suggests that the synergy between the halal industry and the green economy can simultaneously generate economic and ecological benefits (Anisah, 2024: 124). Other studies add that the concept of *maqashid shariah* strengthens the sustainability dimension of the halal industry (Jailani et al., 2025: 3). This demonstrates that the halal concept has broad relevance in addressing climate change and urban environmental crises.

Sustainable cities require supply chain systems that are transparent, efficient, and adaptive to societal needs. In many cases, the major problems of urban areas lie in energy-intensive distribution, logistics congestion, and high levels of product loss during delivery. The principles of the halal supply chain emphasize traceability, cleanliness, product segregation, and accountability among actors within the value chain. Recent studies confirm that halal supply chains combined with sustainability can improve operational efficiency and public trust (Hasanah et al., 2025: 59). Other findings also show that the integration of halal supply chains enhances the competitiveness of modern urban industries (Putri et al., 2024: 110). If implemented in large cities, this system can reduce waste while improving the quality of distribution services.

Waste management remains a major challenge in urban development in Indonesia. Industrial activities and household consumption generate increasing volumes of waste every year, while management capacity remains limited. In this context, a green halal industry can encourage cleaner production through sustainable packaging design, recycling, and the minimization of raw material residues. Previous studies explain that the green halal industry places waste management as part of the moral and economic responsibility of firms (Hasanuddin, 2024: 8). Other research states that halal principles can be integrated with the circular economy to reduce production residues (Anisah, 2024: 126). This approach is highly relevant for assisting municipal governments in reducing landfill burdens and environmental pollution.

In addition to environmental concerns, sustainable urban development also requires social justice and consumer protection. Urban communities are becoming increasingly critical regarding product origins, production processes, and their impacts on health and the environment. The halal industry possesses social capital in the form of trust because it is associated with standards of cleanliness, safety, and business ethics. Research indicates that trust is a primary factor in the growth of the modern halal market in Indonesia (Putri et al., 2024: 113). Other studies confirm that consumer loyalty increases when halal and sustainability aspects are fulfilled simultaneously (Hasanah et al., 2025: 61). If developed through green principles, the halal industry can satisfy not only religious needs but also build cross-segment consumer loyalty.

Digital transformation provides major opportunities for the implementation of the green halal industry in urban areas. Technologies such as the Internet of Things, blockchain, and big data enable energy monitoring, raw material tracking, and real-time halal verification. Digitalization also helps firms reduce operational costs and improve distribution accuracy. Studies on halal traceability systems confirm that technological integration can strengthen transparency and prevent product contamination within supply chains (Alourani & Khan, 2024: 2). Other research states that supply chain digitalization

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contributes to industrial efficiency and sustainability (Putri et al., 2024: 114). For smart cities, such innovation is essential for supporting efficient and sustainable public services.

Despite its considerable potential, the implementation of the green halal industry in Indonesia still faces various structural constraints. Many urban MSMEs do not yet possess adequate understanding of green production, energy efficiency, or integrated halal standards. Some business actors also consider certification costs and technological investments to be relatively high. Previous studies highlight that the main challenges of the national halal industry include low human resource capacity, weak supply chain collaboration, and limited policy support (Dynamics of Halal Supply Chain Development, 2024: 22). Other studies indicate that MSME readiness is a determining factor in the success of the green halal transition (Hasanuddin, 2024: 10). Unless these barriers are addressed, Indonesian cities will face difficulties in building globally competitive halal industrial ecosystems.

From an economic perspective, the green halal industry has the potential to create new added value for urban regions. Cities with green halal ecosystems can attract investors, expand export markets, and enhance regional reputations. This is important because the global halal market continues to grow while increasingly emphasizing ESG and sustainability issues. Several studies state that the competitiveness of the halal industry can no longer rely solely on halal labels, but must also be supported by environmental efficiency and innovation (Anisah, 2024: 127). Other research confirms that green branding strengthens the position of halal products in international markets (Hasanah et al., 2025: 62). Therefore, the green halal industry can become a new engine of economic growth based on ethics and innovation.

The fashion, food, and cosmetic sectors are examples of fields with strong potential for development through the green halal industry approach. Consumer demand for halal and environmentally friendly products is increasing, particularly among younger urban generations. Small and medium enterprises have significant opportunities to serve this market when supported by appropriate business models. Research on clothing SMEs in Indonesia demonstrates the need to integrate green industry practices and halal systems through a socio-technical approach so that business actors become more adaptive (Wardiani, 2025: 45). Other studies confirm that halal MSMEs possess substantial potential within the regional sustainable development agenda (Hasanuddin, 2024: 9). These findings indicate that the green halal industry is relevant not only for large corporations, but also for local MSMEs..

RESEARCH METHODE

This study employed a qualitative approach using the literature review method. This approach was selected because it is intended to understand, interpret,

and critically examine the concept of the green halal industry and its relationship with sustainable urban development based on various relevant scholarly sources (Creswell, 2018: 41). The research data were derived from national and international journal articles, academic books, official institutional reports, and policy documents discussing the halal industry, sustainability, urban development, and supply chain management (Snyder, 2019: 334). Through this approach, the study was able to synthesize diverse perspectives and generate a comprehensive conceptual understanding of the issue under investigation.

The research process began with the identification of relevant literature through systematic searches using keywords such as *green halal industry*, *halal supply chain*, *sustainable city*, *urban development*, and *circular economy* (Okoli, 2015: 880). The collected literature was then screened based on topic relevance, year of publication, academic quality, and its contribution to the research discussion (Xiao & Watson, 2019: 95). Subsequently, the data were analyzed using content analysis techniques through stages of data reduction, thematic categorization, concept comparison, and critical interpretation (Krippendorff, 2018: 24). This analytical procedure enabled the study to identify recurring patterns, theoretical linkages, and research gaps related to green halal industry practices in urban contexts.

To ensure the validity of the review, the study applied source triangulation by comparing multiple viewpoints and findings from previous studies (Patton, 2015: 662). The results of the analysis were then presented in a descriptive-analytical manner to explain the opportunities, challenges, and implications of the green halal industry in supporting sustainable urban development in Indonesia (Miles et al., 2019: 8). By integrating evidence from diverse sources, this method provides a robust foundation for policy recommendations and future academic discussions concerning the development of sustainable and inclusive urban industrial system.

RESULT AND DISCUSSION

The Concept of Green Halal

The concept of green halal has emerged as a response to the needs of modern industry, which is no longer oriented solely toward profit, but also toward environmental sustainability and Sharia compliance. This approach positions halal not merely as a product label, but as an ethical, safe, and responsible production system. In Indonesia, consumer expenditure in the halal sector has continued to increase and has been estimated to exceed USD 280 billion in recent years. These findings indicate that the halal market possesses substantial economic value while simultaneously offering significant opportunities for green transformation (Anisah, 2024: 120). A similar argument

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emphasizes that the integration of halal values and sustainability represents a new direction for national industrial development (Hasanuddin, 2024: 6).

Conceptually, green halal integrates three core dimensions: halal, *thayyib*, and sustainability. Halal ensures that raw materials, production processes, and distribution comply with Islamic law, while *thayyib* emphasizes product quality, safety, and wholesomeness. Sustainability expands this framework to include energy efficiency, emission reduction, and waste management. In the food industry, the implementation of such a system can contribute to reducing food waste, which in Indonesia still reaches millions of tons annually (Jailani et al., 2025: 3). The relationship between Sharia principles and environmental responsibility has also been reinforced in studies on the national green industry agenda (Anisah, 2024: 124).

Green halal asserts that economic activities should generate benefits without damaging ecosystems. This principle is consistent with *maqashid shariah*, which places the protection of life, wealth, and the environment among its essential objectives. In business practice, firms are encouraged to use renewable raw materials and minimize production residues. If 30% of urban food industries adopted environmentally friendly packaging, municipal plastic waste volumes could decline significantly. This perspective is supported by research on strengthening *maqashid shariah* within the halal industry (Jailani et al., 2025: 3). Similar explanations are also provided by Hasanuddin (2024: 8).

One of the key pillars of green halal is energy efficiency in production processes. Many urban industries still depend on fossil-fuel-based electricity, which contributes substantially to carbon emissions. Through the adoption of solar panels, energy-saving machinery, and periodic energy audits, operational costs may be reduced by approximately 10–25%. This strategy is particularly important for MSMEs, which are highly sensitive to increases in production costs (Dynamics of Halal Supply Chain Development, 2024: 22). The need for greater industrial efficiency has also been discussed by Putri et al. (2024: 101).

Another dimension of green halal is waste management based on circular economy principles. Residual raw materials are no longer viewed as waste, but as resources that can be processed and reused. For example, organic waste from the food industry can be converted into compost or livestock feed. If implemented across 1,000 small enterprises, waste reduction sent to landfills could reach thousands of tons annually. This approach has been elaborated by Anisah (2024: 126). The moral responsibility of companies in managing waste has also been emphasized by Hasanuddin (2024: 8).

Green halal also requires transparency throughout the supply chain. Consumers increasingly seek information regarding the origin of raw materials, production processes, and the environmental impact of the products they purchase. Digital traceability systems

enable these processes to be monitored in real time. Consumer trust tends to increase when information is made openly available and verified accurately (Alourani & Khan, 2024: 2). The positive effect of trust on the Indonesian halal market has also been highlighted by Putri et al. (2024: 113).

For MSMEs, green halal can serve as an instrument for enhancing competitiveness. Many small enterprises offer high-quality products, yet remain disadvantaged in terms of production standards and market branding. Through halal certification and green practices, product value can increase in both domestic and export markets. Consumer surveys increasingly show that younger generations are willing to pay more for ethical and environmentally friendly products. The strategic potential of halal MSMEs has been discussed by Hasanuddin (2024: 9). Adaptive approaches for small industries have also been outlined by Wardiani (2025: 45).

Green halal is not only relevant to the food sector, but also to fashion, cosmetics, pharmaceuticals, and services. In the fashion industry, the use of natural dyes and textile recycling forms an important part of green transformation. In cosmetics, producers are encouraged to use safe ingredients and refillable packaging systems. The market value of Indonesia's modest fashion sector continues to grow alongside rising urban consumption. The need for environmental innovation in halal products has been discussed by Anisah (2024: 127). The strengthening of green branding is further explained by Hasanah et al. (2025: 62).

The social dimension of green halal is reflected in worker protection and fairness in business relations. This system rejects labor exploitation, inadequate wages, and business practices that disadvantage small suppliers. Accordingly, green halal addresses not only environmental concerns, but also economic ethics and inclusive development. Such an approach is particularly relevant for large cities characterized by high levels of inequality. The relationship between consumer loyalty and ethical values has been explained by Hasanah et al. (2025: 61). Public trust as a form of social capital has also been discussed by Putri et al. (2024: 113).

The primary challenge in implementing green halal lies in the high initial investment costs. Energy-efficient machinery, certification, and digitalization require substantial capital, especially for small enterprises. However, in the long term, savings in electricity, water, and raw materials can offset these expenditures. Many studies indicate that the payback period of efficiency technologies generally ranges from two to five years. These structural barriers have been described in *Dynamics of Halal Supply Chain Development* (2024: 22). MSME readiness has also been discussed by Hasanuddin (2024: 10).

Government regulation is a decisive factor in the success of green halal. Tax incentives, green financing schemes, and certification subsidies can accelerate adoption

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of this system. If 20% of urban MSMEs received support for green transformation, the resulting impacts on employment and environmental quality would be substantial. Local governments may also integrate green halal into regional economic roadmaps and development planning. The importance of policy support has been highlighted by Hasanuddin (2024: 10). Weaknesses in supply chain governance were also noted in *Dynamics of Halal Supply Chain Development* (2024: 22).

Education and public literacy also determine the success of the green halal concept. Many consumers still understand halal merely as the absence of prohibited ingredients, rather than as an ethical and healthy production system. Public campaigns can broaden awareness that choosing green products also contributes to environmental protection. In large cities with millions of inhabitants, changes in consumption behavior can generate significant cumulative impacts. The need to expand the meaning of halal has been discussed by Anisah (2024: 124). The relevance of sustainability is likewise emphasized by Hasanuddin (2024: 6).

Digitalization is accelerating the adoption of green halal in the era of Industry 4.0. Production sensors, blockchain systems, and big data analytics can measure carbon footprints while simultaneously ensuring halal compliance. These technologies reduce human error and improve distribution efficiency. Firms that utilize digital systems are generally more responsive to changing market demand. The benefits of traceability have been discussed by Alourani and Khan (2024: 2). The contribution of digital supply chains has also been explained by Putri et al. (2024: 114).

From a global perspective, green halal can become a new identity for Indonesian products. Export destination countries increasingly pay attention to ESG indicators, carbon emissions, and the sustainability of raw materials. Therefore, halal certification alone is no longer sufficient without evidence of environmentally responsible processes. If Indonesia succeeds in leading this segment, halal export values may increase substantially. Arguments regarding global competitiveness have been advanced by Anisah (2024: 127). The strengthening of international market positions has also been discussed by Hasanah et al. (2025: 62). Overall, green halal represents a comprehensive paradigm for industrial development. It connects economic growth, environmental protection, and social welfare within a unified framework. This concept is highly relevant for Indonesia, which has a large Muslim population and serious urban ecological challenges. With appropriate strategies, green halal can become a model for future industrial transformation

Integrating Halal Principles and Sustainability in Urban Development

Sustainable urban development requires the integration of economic, social, and environmental dimensions across all production and distribution systems. Halal principles can serve as an ethical foundation for achieving these objectives. Major Indonesian cities face increasing pressures from urbanization, high consumption levels, and limited land availability. Consequently, development models based on halal values and sustainability are becoming increasingly relevant. This urgency has been explained by Putri et al. (2024: 110). The relationship between halal principles and the sustainability agenda is also discussed by Hasanuddin (2024: 6).

One of the principal problems of modern cities lies in inefficient logistics systems. Traffic congestion increases fuel costs, travel time, and carbon emissions. Halal supply chains emphasize orderliness, cleanliness, and accountability among actors. If logistics routes were optimized, distribution costs could decline by approximately 15%, while emissions would also be reduced. These operational efficiency gains are discussed by Hasanah et al. (2025: 59). The competitiveness of modern cities is likewise explained by Putri et al. (2024: 110).

Sustainable cities require food systems that are safe, affordable, and resilient. Halal principles ensure hygienic food processes and freedom from contamination. Sustainability adds dimensions such as local sourcing and reduced food miles. Through shorter supply chains, product quality can be better maintained while carbon footprints decline. The importance of comprehensive process management has been discussed by Putri et al. (2024: 101). Weaknesses in the national system were also noted in *Dynamics of Halal Supply Chain Development* (2024: 17).

Urban waste has become a strategic issue in almost all Indonesian cities. Daily waste generation in major urban areas can reach thousands of tons per day. The integration of halal and sustainability encourages recyclable packaging design and low-residue production systems. Such policies can reduce the burden on landfills, which continues to increase annually. The relevance of waste management has been explained by Hasanuddin (2024: 8). Circular economy approaches are also discussed by Anisah (2024: 126).

Social justice is an important component of sustainable urban development. The halal industry promotes fair, trustworthy, and non-exploitative business practices. In urban contexts, this means protecting workers, small suppliers, and consumers. Cities characterized by fairness and inclusion tend to achieve stronger social stability. The role of trust has been explained by Putri et al. (2024: 113). Ethical consumer loyalty is also discussed by Hasanah et al. (2025: 61).

Smart city initiatives can be strengthened through a digital halal ecosystem. Internet of Things technologies enable monitoring of temperature, product quality, and energy use in warehouses and distribution vehicles. Blockchain strengthens halal

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verification and prevents data manipulation. Such systems are particularly important for cities with millions of daily transactions. The benefits of these technologies are discussed by Alourani and Khan (2024: 2). The efficiency of digital supply chains is also explained by Putri et al. (2024: 114).

Urban transportation contributes significantly to emissions. Therefore, the integration of halal and sustainability can be implemented through electric logistics fleets or vehicles using low-emission fuels. Fast, clean, and reliable halal product distribution would improve the quality of urban services. If 25% of logistics fleets shifted to low-emission vehicles, air pollution could be reduced substantially. The importance of distribution efficiency has been explained by Hasanah et al. (2025: 59). Urban system competitiveness is also discussed by Putri et al. (2024: 110).

Shopping centers and traditional markets can become important spaces for implementing urban halal sustainability. Waste management, sanitation, and building energy efficiency are key considerations. Halal certification for tenants can be integrated with green building standards. This would provide consumers with safe and environmentally friendly purchasing experiences. The integration of halal values has been discussed by Hasanuddin (2024: 6). The relevance of environmental innovation is also highlighted by Anisah (2024: 124).

Urban MSMEs play a central role in city economies. They dominate the number of business units and absorb a large share of employment. If MSMEs are directed toward green halal models, the resulting impacts on cities would be extensive. However, they require training, financing, and technological access. MSME readiness has been discussed by Hasanuddin (2024: 10). Socio-technical approaches are also explained by Wardiani (2025: 45).

The integration of halal and sustainability also supports public health in cities. Hygienic, safe, and low-risk products reduce health risks for communities. At the same time, cleaner urban environments help lower the disease burden caused by pollution. Thus, the benefits are not only economic, but also related to health and quality of life. Safety standards are discussed by Putri et al. (2024: 113). The quality dimension of *thayyib* is also explained by Jailani et al. (2025: 3).

From an investment perspective, cities with green halal ecosystems are more attractive to investors. Global investors increasingly consider ESG indicators before allocating capital. Urban industrial zones that are energy-efficient and halal-certified possess greater competitive value. This can increase regional revenues and create new employment opportunities. Economic opportunities are discussed by Anisah (2024: 127). International green branding is also addressed by Hasanah et al. (2025: 62).

Public policy should therefore be directed toward cross-sector integration. Departments of trade, environment, cooperatives, and industry must work collaboratively. Without coordination, halal and sustainability programs will remain fragmented. Cities require roadmaps with measurable targets, such as reducing waste by 20% within five years. The importance of collaboration is explained in *Dynamics of Halal Supply Chain Development* (2024: 22). Policy support is also emphasized by Hasanuddin (2024: 10).

Changes in urban consumer behavior are another crucial factor in the success of this model. Consumers who choose green halal products create incentives for producers to adapt. Younger urban generations tend to be more concerned with environmental issues and ethical consumption. Consequently, the potential market continues to expand each year. Trends in consumer loyalty are discussed by Hasanah et al. (2025: 61). Trust in the halal market is also explained by Putri et al. (2024: 113).

Each city may develop a different model according to its local economic characteristics. Industrial cities may focus on energy efficiency and manufacturing waste reduction. Tourism cities may emphasize green halal culinary sectors and sustainable hospitality. Trade-oriented cities may prioritize digital halal logistics systems. This flexibility makes the concept highly adaptable across diverse urban contexts. Sectoral opportunities are discussed by Hasanuddin (2024: 9). Competitive strengthening is also explained by Putri et al. (2024: 110).

Overall, the integration of halal principles and sustainability offers a transformative direction for urban development in Indonesia. This model not only connects citizens' quality of life, economic efficiency, and environmental protection within a single framework, but also redefines how cities can grow in a more balanced and responsible manner. Amid accelerating urbanization, rising resource pressures, and increasing environmental risks, Indonesian cities require systems that are ethical, resilient, and adaptive to future challenges. In this regard, green halal urban development should be positioned as a national strategic agenda capable of strengthening competitiveness while ensuring long-term social and ecological welfare. Its implementation would enable cities to become centers of inclusive growth, sustainable innovation, and trusted governance. This conclusion is consistent with Hasanuddin (2024: 6), while a similar perspective is presented by Anisah (2024: 120).

CONCLUSION

The green halal industry represents a modern economic development model that integrates halal principles, *thayyib*, and environmental sustainability within a systemic framework. This concept demonstrates that the halal industry is no longer limited to final product certification, but extends to the entire cycle of production, distribution,

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consumption, and responsible waste management. In the context of urban development, the green halal industry is highly relevant for addressing various urban challenges such as pollution, logistics congestion, high waste volumes, and increasing consumer demand for products that are safe, ethical, and environmentally friendly. The findings of this study confirm that the integration of halal principles and sustainability can improve operational efficiency, strengthen supply chain transparency, encourage digital innovation, and enhance the competitiveness of MSMEs and regional investment. Furthermore, this approach has the potential to reinforce Indonesia's position in the global halal market, which is increasingly concerned with ESG standards and the green economy. However, the implementation of the green halal industry still encounters several barriers, including limited literacy, high initial investment costs, low technological readiness, and insufficient cross-sector policy support. Therefore, the successful development of the green halal industry requires strong synergy among government, business actors, academics, and society through adaptive regulations, economic incentives, public education, and the strengthening of technological innovation. With such strategies, the green halal industry can become a new paradigm of sustainable urban development in Indonesia that balances economic growth, social justice, and environmental preservation..

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