Digital Transformation in Halal Certification: Opportunities for SMEs in Indonesia

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Article history:	Abstract
Received: 31st December 2024 **Revised**: 10th January 2025 **Accepted:** 02nd February 2025	Many MSMEs in Indonesia continue to face challenges in understanding digital halal certification due to limited access to technology and digital infrastructure. To address this issue, effective technological education and online halal certification training are essential to help MSMEs fully utilize the certification process. This study aims to explore the opportunities and benefits of digital transformation in halal certification for MSMEs. Using a qualitative approach with a case study method, the research focuses on MSMEs in Kraton Village, Kencong, Jember, that have obtained halal certification through a mobile application. Data was collected through in-depth interviews, observations, and documentation, then analyzed using the Miles and Huberman method, which includes data reduction, conclusion drawing, and verification. The findings reveal a significant positive impact of digital technology—particularly mobile applications—on the halal certification process for MSMEs. The adoption of digital tools has significantly reduced administrative burdens by simplifying the certification application process, minimizing the need for physical documents, and streamlining bureaucratic procedures. These results indicate that digital technology enhances administrative efficiency, expands market opportunities, and improves access to halal certification. However, this study has limitations, including a narrow sample size and the lack of long-term analysis. Future research should expand the sample, investigate long-term effects, and assess the training and challenges faced by MSMEs in adopting digital halal certification.
Keywords	Digital transformation; Halal certification, MSME Opportunities

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1. INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) in Indonesia play a crucial role in the national economy, contributing approximately 60% to the Gross Domestic Product (GDP) and employing over 97% of the workforce (Saputra & Darmawan, 2023; Yolanda, 2024). Strengthening MSMEs through digitalization can significantly impact economic growth. Additionally, as Indonesia has the world's largest Muslim population, there is a high demand for halal products. Digital halal certification enables MSMEs to access the global market more easily, potentially increasing exports and boosting economic growth (Nusran et a., 2023).

However, the traditional halal certification process is often time-consuming and costly, posing a significant challenge for MSMEs. Digitalization offers a solution by reducing complexity and costs,

making certification more accessible (Zairina & Wafa, 2023). Despite its potential benefits, many MSMEs in Indonesia face challenges in accessing technology and digital infrastructure. Therefore, adequate technological support and training are essential for the effective adoption of digital halal certification. Awareness and understanding of this certification remain low among MSMEs (Adiyanto & Amaniyah, 2023), highlighting the need for training and e-learning programs to enhance knowledge and readiness (Mardianto et al., 2023).

From a marketing perspective, digital halal certification can improve product transparency and credibility, strengthen branding efforts, and expand market reach through digital marketing strategies (Nusran et al., 2023; Ahmad et al., 2023). Additionally, blockchain technology can enhance data security and transparency, addressing concerns regarding certification authenticity (Bello & Muazu, 2023). Government support through policies and initiatives, including infrastructure development and training programs, plays a crucial role in facilitating this digital transformation for MSMEs (Listiyono, et al., 2024).

Research findings support the advantages of digitalizing the halal certification process. Studies by Rayyan (2024) and Nurhayati (2023) indicate that digitalization improves efficiency by reducing processing time and operational costs. Rachim & Santoso (2021) further emphasize that digital technology simplifies the certification process, making it more accessible to MSMEs. Moreover, Khan et al. (2021) and Nyimas et al. (2024) highlight how blockchain technology enhances transparency and security in halal certification by enabling precise supply chain tracking. Ayyub et al. (2024) found that digital transformation increases operational efficiency and competitiveness while providing MSMEs with broader access to international markets. Additionally, Simanjuntak et al. (2024) and Kumaladewi (2020) stress the importance of e-learning and digital training in helping MSMEs better understand halal certification requirements. Research by Izmir et al. (2023) underscores how digital halal certification strengthens product marketing, enhances transparency, and builds consumer trust in global markets.

Despite these advantages, Islam (2023) identified challenges such as high costs and a lack of awareness regarding digital halal certification. Addressing these barriers requires targeted support and awareness programs. The digital transformation of halal certification presents both opportunities and challenges for MSMEs in Indonesia. While existing research has primarily focused on improving efficiency and reducing costs, this study aims to explore the broader opportunities that digital transformation can offer.

Industry reports and case studies indicate that digitalization can open new opportunities for MSMEs, particularly in the certification process. For instance, the adoption of blockchain technology for tracking and verifying halal products can help MSMEs meet certification standards more transparently and efficiently. Case studies from various countries demonstrate that digital transformation has enabled MSMEs to overcome efficiency and cost challenges while enhancing their competitiveness in international markets.

Several technological implementations, such as mobile applications for halal certification verification, have yielded positive results by reducing administrative burdens and improving accessibility for MSMEs. Given these advantages, this article aims to address the gaps in existing research by exploring the opportunities and benefits of digital transformation in halal certification for MSMEs.

Digital technology, particularly mobile applications, can streamline certification processes by reducing the reliance on physical documents and bureaucratic procedures, ultimately saving time and costs. Furthermore, digital platforms increase accessibility for MSMEs, including those in remote areas, by providing timely information and services related to halal certification.

The digital transformation of halal certification also facilitates affordable and accessible compliance with certification standards, opening up broader market opportunities for MSMEs. Additionally, real-time guidance and feedback through digital platforms allow businesses to make necessary adjustments promptly, ensuring compliance with certification requirements. Thus, digital transformation holds significant potential for simplifying the halal certification process for MSMEs while enhancing their competitiveness in an increasingly halal-conscious global market.

2. RESEARCH METHOD

This research employs a qualitative approach using a case study method to analyze and understand the opportunities and benefits of digital transformation in halal certification for MSMEs (Priya, 2021). The case study method was chosen as it enables an in-depth exploration of these opportunities and benefits. This approach provides valuable insights into how digital transformation enhances halal certification processes, particularly for MSMEs that have already obtained halal certification.

Participants in this study were selected using purposive sampling techniques (Andrade, 2021). This method was chosen because it allows researchers to gather specific, in-depth data from individuals with relevant knowledge and experience. The study focuses on MSMEs in Kraton Village, Kencong District, Jember, which have obtained halal certification through digital technology, specifically via a mobile application. The diverse backgrounds of these participants enable a comprehensive exploration of digital transformation's impact on halal certification, providing accurate and varied insights.

Data for this case study was collected through in-depth interviews, observations, and document analysis (Alam, 2020). Interviews were conducted with MSME representatives who had successfully registered their halal products using the mobile application. Observations were carried out to directly examine the application and verification processes facilitated by digital technology. Additionally, observation notes were used to document interactions and processes during field research. The primary research instrument was a semi-structured interview guide designed to gather information on experiences, benefits, challenges, and the overall impact of digital transformation on halal certification (Adeoye-Olatunde & Olenik, 2021).

The qualitative data analysis followed the method proposed by Miles and Huberman (2002) in Salmona (2024), consisting of four key steps. The first step, data collection, involved gathering information through interviews, observations, and document analysis. Next, data reduction was conducted to select, simplify, and transform raw data into relevant and focused information aligned with the research objectives (Moser & Korstjens, 2018). The third step, data presentation, involved organizing the reduced data into comprehensible formats such as narratives, tables, or diagrams to help identify patterns and relationships (Gandhi & Pruthi, 2020). Finally, conclusions were drawn and verified through triangulation methods to ensure the validity and reliability of the findings (Abdalla et al., 2018).

By following this structured approach, this research delivers in-depth and valid data analysis, offering significant insights into the role of digital transformation in halal certification for MSMEs.

3. RESULTS AND DISCUSSIONS

The Results and Analysis section presents the findings of the data analysis, hypothesis testing, answers to research questions, as well as the interpretation of the findings. The results of this research reveal various opportunities and significant benefits from implementing digital technology in the halal certification process for MSMEs, the results of this research are as follows:

Reducing Administrative Burden

Research indicates that implementing a mobile application for halal certification verification significantly reduces the administrative burden on MSMEs. Digitalization has streamlined the certification process, minimizing the reliance on physical documents and eliminating complex bureaucratic procedures. As a result, MSME owners report substantial time savings compared to conventional methods. According to an interview with Mrs. SR:

"I have been running a chips business for five years. Initially, obtaining halal certification was quite difficult because the process was long and required a lot of documents, plus you had to go back and forth to the certification office frequently. However, after using the mobile application to verify halal certification, the process becomes much faster and easier because everything can be done online. This reduces time compared to conventional methods. In addition, this application greatly reduces bureaucratic complexity, making everything more transparent and organized, thereby helping to process halal certification more efficiently."

Field observations indicate that the implementation of mobile applications for halal certification verification significantly reduces the administrative burden faced by MSMEs. The certification application process, which was previously hindered by cumbersome paperwork and complex bureaucracy, has become more structured and efficient with digitalization. In the past, MSMEs had to manage extensive physical documentation, often resulting in delays. However, with the adoption of digital applications, the need for physical documents has been drastically reduced, and bureaucratic procedures have become more streamlined. Observations also reveal that the time required to complete the certification process has decreased, enabling MSMEs to focus more on business growth. This aligns

with reports from MSME stakeholders who have noted time savings and a reduction in administrative burdens due to mobile application usage in the halal certification process.

The findings above illustrate the positive impact of digital technology, particularly mobile applications, on the halal certification verification process for MSMEs. More broadly, this transformation marks a shift from a manual, time-consuming system to a more efficient and accessible digital framework. Previously, MSME owners struggled with bureaucratic complexities and the burden of managing physical documents; now, they experience greater convenience and a significant reduction in administrative workload.

From a critical perspective, these findings suggest that technology is not merely a tool but a paradigm shift in how MSMEs operate. Digitalization allows businesses to allocate more time and resources toward growth rather than being bogged down by bureaucratic inefficiencies. However, this also highlights the urgent need to support MSMEs that may lack the technological readiness or access required to adapt to these changes.

The reduction of administrative burdens on MSMEs in Kencong district can be illustrated in Figure 1.

Figure 1.

Reduction of administrative burden
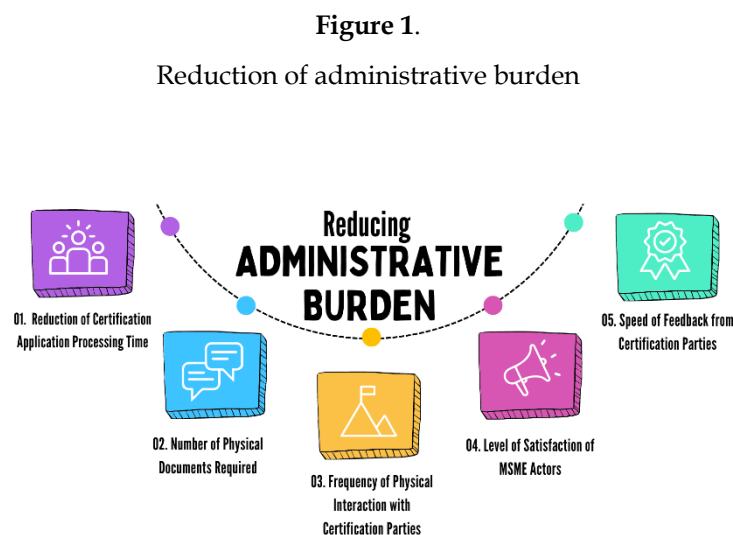
The digital transformation of MSMEs has become an increasingly important topic in business development. Digital technology, particularly mobile applications, has proven to be an effective tool for enhancing operational efficiency and accessibility for small and medium-sized businesses. According to Ardyansyah (2021), integrating digital technology into the MSME sector not only accelerates business processes but also creates new opportunities in an increasingly competitive market. In the context of halal certification, digitalization helps MSMEs overcome bureaucratic challenges and administrative hurdles that often complicate the certification process.

One of the key advantages of digitalization is the reduction of administrative burdens, which is especially relevant to halal certification. Research by Widiastuti (2020) indicates that mobile applications can significantly reduce the time and effort required for certification applications, particularly through

online submission features and digital document storage. This enables MSME owners to focus more on business development rather than being entangled in complex bureaucratic procedures.

Beyond efficiency, digital technology also enhances accessibility for MSMEs, especially those in remote areas. A study by Prasetyo and Wahyudi (2020) found that MSMEs with limited access to conventional certification services can now apply for halal certification via mobile applications without the need for long-distance travel. This not only promotes inclusivity but also encourages more MSMEs to meet halal standards, ultimately expanding their market reach and increasing competitiveness.

Halal certification obtained through digital processes has also been shown to enhance the market competitiveness of MSMEs. Rachman (2019) found that certified MSMEs respond more swiftly to market demands, particularly from consumers who prioritize halal products. Additionally, the accelerated certification process made possible by digital technology contributes to increased sales and market penetration. Within a year of obtaining halal certification through mobile applications, many MSMEs reported significant sales growth, demonstrating that digital transformation delivers both operational and economic benefits.

Despite its numerous advantages, implementing digital technology in the halal certification process presents challenges, particularly in terms of MSMEs' readiness and access to technology. According to Nasution (2021), not all MSMEs have the necessary resources or knowledge to adapt to new technologies. Therefore, support in the form of training and mentorship is essential to ensure that all business owners can effectively utilize digital tools. Furthermore, the government and relevant institutions must ensure that mobile applications and digital platforms are designed with inclusivity in mind, making them accessible to MSMEs from diverse backgrounds.

Accessibility Improvement Administration

The research findings indicate that digital technology enhances MSMEs' access to halal certification services. Previously, MSMEs in remote areas faced challenges in obtaining certification; however, with the introduction of a mobile application, they can now access these services more easily. As a result, the number of MSMEs applying for halal certification increased during the research period. This aligns with insights from an interview with Mrs. SR.

"After using the mobile application for halal certification, we felt a very significant increase in access. Previously, as MSMEs located in remote areas, we had difficulty processing certification due to distance and limited access to the certification office. However, with this application, all processes can be done online, so we no longer need to travel long distances. "This makes it very easy for us, and many other MSMEs around here who have also finally applied for halal certification thanks to the convenience offered by this technology."

Field observations indicate that digital technology has significantly improved MSMEs' access to halal certification services, particularly in remote areas. Previously, MSMEs in these locations faced considerable challenges in obtaining certification, often requiring long and costly trips to certification offices. However, with the introduction of mobile applications, the entire certification process can now be completed online without the need to travel.

The increased number of MSMEs applying for halal certification during the research period highlights the substantial positive impact of this enhanced accessibility. This development demonstrates how digital technology has enabled more MSMEs to meet halal standards, even in areas that were previously difficult to reach.

The data further illustrate how mobile applications have streamlined the halal certification process for MSMEs in remote regions. Before the advent of this technology, geographic barriers and limited access to certification offices placed a significant burden on these businesses. Mobile applications have effectively removed these obstacles, making the process more efficient and accessible.

From an analytical perspective, this transformation underscores the crucial role of digital technology in equalizing access to essential services like halal certification. It represents a fundamental shift in how public services are delivered, reducing disparities faced by businesses across different locations. Mobile applications serve as a vital bridge, connecting MSMEs in remote areas with certification bodies that were once difficult to reach. The improvement in accessibility for MSMEs in Kencong District is described in figure 2.

Figure 2.

Administration of Accessibility Improvements

The digitalization of public services has become a global trend aimed at increasing efficiency, accessibility, and transparency. According to Mergel et al. (2019), digitalization enables faster and more responsive public service delivery, particularly in sectors previously constrained by bureaucracy and lengthy manual processes. In the MSME sector, digitalizing services such as halal certification is a crucial step in reducing geographic and administrative barriers that often hinder business owners, especially those in remote areas.

Mobile applications have emerged as essential tools for facilitating access to various services, including halal certification. Janssen et al. (2018) highlight that mobile application allows users to access information and services anytime and from anywhere, making them highly relevant for MSMEs with limited resources and physical access to certification offices. The increasing number of mobile

application users for halal certification reflects a significant shift from conventional methods toward digitalization, as observed in field studies.

The lengthy and complex certification process often poses a challenge for MSMEs. Li et al. (2020) found that digitalization can significantly reduce the time required to complete administrative procedures, which previously involved extensive physical documentation and direct interactions with authorities. Research findings support this, demonstrating a reduction in processing time for halal certification after the implementation of mobile applications. This has enabled MSMEs to complete their applications more quickly and efficiently.

Accessibility remains one of the most significant challenges for MSMEs in remote areas. Reddick et al. (2021) noted that digital technology, particularly mobile applications, can extend the reach of public services to underserved regions. With mobile applications, MSMEs in remote locations are no longer constrained by long distances to service centers, allowing them to apply for halal certification more easily. The observed increase in certification applications from MSMEs in remote areas further underscores the importance of digital access in empowering business owners.

User satisfaction is a key indicator in assessing the success of digital technology implementation in public services. Parasuraman et al. (1988) developed the SERVQUAL model, which includes five dimensions of service quality, such as reliability, responsiveness, and ease of access. In the context of halal certification, mobile applications that streamline the application process and provide real-time feedback can enhance user satisfaction, particularly by improving accessibility and reducing administrative burdens. This is reflected in the positive feedback from MSMEs, indicating that the mobile application has significantly simplified the halal certification process.

Market Opportunities and Competitiveness

The findings of this research indicate that digital transformation in halal certification has successfully opened new market opportunities for MSMEs. With a faster and more affordable certification process, MSMEs are able to respond more swiftly to market demand, particularly from consumers who prioritize halal products. The research highlights that MSMEs using digital technology for halal certification see an increase in sales within a year of obtaining certification. This aligns with the insights shared by Mrs. SR during the interview:

> "*After utilizing digital technology for halal certification, we felt a positive impact on market opportunities and our competitiveness. A faster and more affordable certification process enabled us to immediately meet market demand, especially from consumers who pay attention to the halalness of products. Within a year after obtaining certification, we experienced an increase in sales. This clearly shows that digital transformation not only simplifies the certification process, but also expands market reach and increases the competitiveness of our products.*"

Based on field observations, digital transformation in halal certification has created new market opportunities for MSMEs and enhanced their competitiveness. The findings indicate that a faster and more affordable certification process through digital technology allows MSMEs to respond to market

demand more efficiently, particularly among consumers who prioritize halal products. Previously, the slow certification process often hindered MSMEs from entering new markets in a timely manner. However, digitalization has significantly shortened the time required to obtain certification. Moreover, MSMEs that have obtained halal certification via mobile applications have experienced an increase in sales. These businesses reported growth in the year following certification, suggesting that halal certification, supported by digital technology, has expanded their market reach. Digital transformation not only simplifies the certification process but also offers tangible benefits in terms of higher sales and greater market competitiveness.

The data underscores the significance of digitalization in accelerating and simplifying the halal certification process for MSMEs. This suggests that digital technology not only streamlines administrative tasks but also directly impacts MSME business performance. What was once a slow and costly certification process is now faster and more affordable, enabling MSMEs to better respond to growing market demand, especially among consumers who prioritize halal products. From a critical perspective, this analysis highlights the essential role of digital transformation in boosting the competitiveness of MSMEs. By addressing bureaucratic delays, digitalization equips MSMEs with the tools necessary to compete more effectively in an increasingly competitive market. The sales increase reported by MSMEs after obtaining certification suggests that consumers are more likely to trust and purchase products that carry halal certification, particularly when the certification process is transparent and efficient. Market opportunities and competitiveness among MSMEs in Kencong District is described in Figure 3.

Figure 3.

Market Opportunities and Competitiveness

Digital transformation has become a crucial factor in enhancing the operational efficiency and competitiveness of MSMEs. According to Schwab (2016), digitalization alters the way companies operate by enabling automation, improving productivity, and providing access to broader markets. In the case of MSMEs, the use of digital technologies, such as mobile applications for halal certification, helps reduce bureaucratic complexity and accelerates business processes that were once slow and manual. A study by Kurniawati et al. (2020) shows that digitalizing the certification process helps

MSMEs save time and reduce costs, ultimately boosting their competitiveness in an increasingly competitive market.

Halal certification serves not only as a symbol of trust for consumers but also as a strategic tool for MSMEs to enter emerging and expanding markets, particularly among Muslim consumers. Wilson and Liu (2011) found that products with halal certification have a strong appeal in the global market, especially in countries with a Muslim majority. Digitalization streamlines the certification process, making it faster and more efficient, enabling MSMEs to respond to market demand more promptly and effectively. This aligns with Hirschman's (2018) findings, which suggest that fast access to halal certification enhances the competitiveness of MSME products in both local and international markets.

Competitiveness refers to the ability of MSMEs to maintain and grow their market share in the face of intense competition. According to Porter (1985), competitiveness can be strengthened through product differentiation, cost advantages, and a focus on specific market segments. In the context of halal certification, the digitalization of the certification process allows MSMEs to set themselves apart from competitors by offering products that are not only of high quality but also meet globally recognized halal standards. Research by Gunawan et al. (2019) shows that MSMEs with halal certification experience increased consumer trust and loyalty, which further boosts their market competitiveness.

The speed at which MSMEs respond to market demand is a key factor in their success. A study by Li et al. (2010) shows that companies that can quickly adapt to changes in consumer demand are more likely to succeed in maintaining their market share. For MSMEs, digital technologies enable them to expedite the halal certification process, which previously posed a significant barrier to responding swiftly to consumer demand. With a faster process, MSMEs can introduce products to market more quickly, ensure business sustainability, and enhance their competitiveness.

Brand reputation is a valuable asset for MSMEs, especially in highly competitive industries. Aaker's (1996) research indicates that a strong brand reputation can foster consumer loyalty and allow companies to charge premium prices. In this context, halal certification obtained through a digital process can improve consumer perceptions of MSME brands, particularly among consumers who prioritize halal product standards. According to Nasrullah and Rahman (2019), a solid reputation for adhering to halal standards can enhance consumer loyalty and strengthen the position of MSMEs in the market.

4. CONCLUSION

The results of this research highlight the significant positive impact of adopting digital technology, particularly mobile applications, on the halal certification process for MSMEs. Digitalization has greatly alleviated the administrative burden on MSMEs by streamlining the certification application process, reducing the need for physical documents, and simplifying complex bureaucratic procedures. As a result, the certification process has become faster and more efficient compared to traditional methods.

Furthermore, digital technology has improved the accessibility of halal certification services for MSMEs, particularly those located in remote areas. Many MSMEs previously faced challenges in accessing these services due to distance and limited infrastructure. With the introduction of mobile applications, they can now complete the entire certification process online, overcoming geographical barriers and increasing the number of MSMEs able to apply for certification.

These findings demonstrate that digital technology not only enhances administrative efficiency but also creates new market opportunities and broadens access to halal certification. This enables MSMEs to compete more effectively and tap into a larger market potential. Therefore, the adoption of digital technology in halal certification not only simplifies administrative processes but also offers significant benefits to MSMEs in terms of accessibility and competitiveness.

However, this study has certain limitations, including a narrow sample scope and a lack of long-term impact analysis. Future research should broaden the sample size, examine long-term effects, compare technology adoption across different MSMEs, and assess the training needs and challenges faced by MSMEs in digital halal certification

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