

## **Digitalization of *Hajj* Fund Management through Shariah E-Commerce Model in the Context of Service and Global Investment Transformation**

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### **Abstract**

This study aims to analyze how the digitalization of *hajj* fund management can enhance efficiency, transparency, and accountability in accordance with Shariah principles. The urgency of this research lies in the increasing complexity of *hajj* services, which demand transparency, accessibility, and strong public accountability alongside the rapid development of digital technology. A qualitative approach was employed with literature review as the primary source of data. The analysis applied thematic analysis to identify recurring patterns and interactive qualitative analysis (IQA) to map the interrelationships among variables in the *hajj* management ecosystem. The reviewed literature covered government regulations, BPKH financial reports, academic studies on digital Islamic finance, as well as research on e-commerce platforms and Islamic fintech. The findings indicate that digitalization through Shariah-compliant Consumer-to-Consumer (C2C) models, integration with the *Nusuk* application, and collaboration with both domestic and international digital platforms improves cost efficiency, expands pilgrims' access, and strengthens transparency in *hajj* fund governance. In addition, direct investment strategies in Saudi Arabia through government-to-government (G-to-G) and business-to-business (B-to-B) cooperation can minimize financial risks while diversifying revenue streams. The implications of this study affirm that digitalization is not merely a technical tool but a structural transformation strategy that has the potential to expand Islamic financial inclusion, strengthen the competitiveness of the *hajj-umrah* industry, and support the global growth of the Islamic economy. The originality of this research lies in its focus on the intersection of Shariah-based digital innovation—particularly the C2C e-commerce model—and *hajj* fund governance. This area remains underexplored in previous studies, thus providing novel contributions both theoretically to the development of digital Islamic finance studies and practically to policymaking in *hajj* fund management in Indonesia.

**Keywords:** *hajj* fund management; digital Islamic finance; C2C e-commerce; Nusuk; Islamic financial inclusion.

### **Abstrak**

Penelitian ini bertujuan untuk menganalisis bagaimana digitalisasi dalam pengelolaan dana haji dapat meningkatkan efisiensi, transparansi, dan akuntabilitas sesuai prinsip syariah. Urgensi penelitian ini terletak pada kebutuhan layanan haji yang semakin kompleks, transparan, dan mudah diakses, seiring dengan tuntutan akuntabilitas publik dan perkembangan teknologi digital. Metode penelitian yang digunakan adalah pendekatan kualitatif dengan teknik tinjauan literatur sebagai sumber data utama. Analisis dilakukan melalui *thematic analysis* untuk menemukan pola berulang serta *interactive qualitative analysis* (IQA) guna memetakan hubungan antarvariabel dalam ekosistem pengelolaan haji. Data literatur yang ditelaah meliputi regulasi pemerintah, laporan keuangan BPKH, kajian akademik tentang keuangan syariah digital, serta riset mengenai *platform e-commerce* dan *fintech* syariah. Hasil penelitian menunjukkan bahwa digitalisasi melalui model *Consumer-to-Consumer (C2C)* berbasis syariah, integrasi aplikasi Nusuk, serta kolaborasi dengan platform digital domestik maupun internasional mampu meningkatkan efisiensi biaya, memperluas akses jamaah, dan memperkuat transparansi tata kelola dana haji. Selain itu, strategi investasi langsung di Arab Saudi melalui kerjasama *government-to-government* (G-

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to-G) dan *business-to-business* (B-to-B) dinilai dapat meminimalkan risiko finansial sekaligus memperbesar peluang diversifikasi pendapatan. Implikasi penelitian ini menegaskan bahwa digitalisasi bukan hanya instrumen teknis, melainkan strategi transformasi struktural yang berpotensi memperluas inklusi keuangan syariah, memperkuat daya saing industri haji-umrah, serta mendukung pertumbuhan ekonomi Islam secara global. Keaslian penelitian ini terletak pada fokusnya pada irisan antara inovasi digital berbasis syariah—khususnya *e-commerce* model C2C—dengan tata kelola dana haji. Hal ini masih jarang dikaji dalam penelitian sebelumnya, sehingga penelitian ini memberikan kontribusi baru baik secara teoritis bagi pengembangan studi keuangan Islam digital maupun secara praktis bagi kebijakan pengelolaan dana haji di Indonesia.

Kata Kunci: pengelolaan dana haji; digitalisasi keuangan syariah; *e-commerce* C2C; Nusuk; inklusi keuangan syariah.

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## INTRODUCTION

The rapid development of digital technology in Indonesia has accelerated significantly, especially during the Covid-19 pandemic, creating both opportunities and challenges for the national economy (Alfarizi, 2023). President Joko Widodo projected that Indonesia's digital economy could reach USD 146 billion by 2025 and grow eightfold by 2030, driven by a young demographic, digital platforms, and technologies such as cloud computing (Sekretariat Kabinet Republik Indonesia, 2022). The value of *e-commerce* transactions in Indonesia also continues to rise, estimated to reach IDR 700 trillion in 2023 (Haqqi, 2023). These structural shifts directly affect Islamic business practices, particularly the management of *hajj* funds, which has become one of the most strategic sectors in the Islamic economy.

As of October 31, 2023, the Hajj Fund Management Agency (*Badan Pengelola Keuangan Haji*, BPKH) managed *hajj* funds amounting to IDR 165.94 trillion (Effendi et al., 2023). The magnitude of these funds requires professional, transparent, and Shariah-compliant governance. President Joko Widodo emphasized the importance of responsible management, especially since BPKH faces challenges such as declining surpluses and increasing subsidies for *hajj* costs. In this context, digital innovation and the involvement of micro, small, and medium enterprises (MSMEs) in the *hajj* ecosystem are considered essential for realizing BPKH's vision of supporting the welfare of the ummah.

Digital transformation in *hajj* services has already begun through the integration of *e-commerce*, Big Data, and artificial intelligence (AI) to enhance efficiency, transparency, and accessibility. For example, the Nusuk application enables pilgrims to access information, book services, and make payments conveniently and accountably (Sikumbang et al., 2022). Thus, digitalization not only improves the quality of services provided to pilgrims but also strengthens public accountability in the governance of *hajj* funds.

Previous studies on digitalization in Islamic finance and *hajj* services can be divided into three main categories. The first category concerns the digital economy and *e-commerce*. Scholars such as Junaedi & Arsyad (2023), Susilawati (2023), and Haqqi (2023) highlight the rapid growth of Indonesia's digital economy, with projections showing significant expansion in the coming decade. These works emphasize opportunities for collaboration with micro, small, and medium enterprises (MSMEs) and the transformative role of digital platforms in creating new business models. However, the orientation of these studies remains largely macroeconomic, focusing on aggregate digital growth trends and market potential, without exploring the technical and institutional aspects of *hajj* fund governance and its integration with Shariah-based financial mechanisms.

The second category focuses on the digitalization of *hajj* services and the development of Islamic financial technology (fintech). Research in this stream emphasizes the importance of professional

communication systems in ensuring effective service delivery for pilgrims (Sikumbang et al., 2022), the application of artificial intelligence (AI) to improve the worship experience and logistics management (Ferreira et al., 2019), and the role of Islamic fintech in expanding financial inclusion (Owie & Salamah, 2023). While these studies provide valuable insights into the operational and service dimensions of digital transformation, they tend to stop at the level of service improvement. Very few works connect these innovations to the broader governance framework of *hajj* fund management or assess their implications for institutional accountability and transparency.

The third category examines the role of Shariah principles in digital transactions. Scholars such as Setiana & Kurniawan (2023) and Kasmawati et al. (2022) analyze *fiqh muamalah*-based rules that underpin permissible digital practices, including *wakalah bi al-ujrah*, *al-samsarah*, and *ju'alah* contracts. These works emphasize the importance of ensuring compliance with Shariah law to maintain consumer trust and legitimacy in Islamic finance. However, this body of research generally focuses on normative and legalistic aspects of digital transactions, without explicitly linking them to the technical and managerial challenges of *hajj* fund governance. Thus, while these studies establish the Shariah foundations for digital commerce, they leave unaddressed the question of how such principles can be operationalized within large-scale institutions like the Hajj Fund Management Agency (BPKH) to enhance efficiency, transparency, and accountability in fund management.

From this review, it is evident that previous studies remain concentrated on macroeconomic trends, service delivery, or compliance with Shariah principles. Very few studies specifically analyze how digitalization—through Shariah-compliant e-commerce models, Islamic fintech, and cross-border investment—can optimize *hajj* fund governance, strengthen financial inclusion, and expand economic benefits for the Muslim community.

This study aims to fill that gap by analyzing the digitalization of *hajj* fund management by BPKH across four strategic domains: (1) the integration of e-commerce and digital platforms in *hajj-umrah* services, (2) the role of Islamic banking and fintech in supporting payment systems and fund governance, (3) the digital transformation of registration and licensing processes, and (4) the potential of direct investment in Saudi Arabia through Shariah-compliant business models. Together, these domains provide a holistic understanding of how digital transformation reshapes the *hajj* ecosystem in Indonesia.

This study argues that implementing Shariah-compliant digital models such as C2C e-commerce, Islamic fintech, and cross-border collaborations not only enhances efficiency, transparency, and accountability in BPKH's fund management but also creates new business opportunities in travel, banking, logistics, and halal industries. By aligning with *fiqh muamalat* and supported by regulations and fatwas such as DSN-MUI No. 144/2021, digitalization ensures that *hajj* fund management remains ethical and professional while addressing contemporary challenges such as governance risks, regulatory resistance, and low Islamic financial literacy. In doing so, this study positions digitalization not merely as a technological trend but as a strategic pathway toward sustainable, Shariah-compliant, and globally competitive *hajj* fund governance.

## RESEARCH METHODS

The unit of analysis in this study is the digitalization of *hajj* fund management implemented by the Hajj Fund Management Agency (BPKH). The research specifically focuses on how BPKH integrates digital platforms, particularly Shariah-compliant Consumer-to-Consumer (C2C) e-commerce, to improve efficiency, transparency, and accountability in managing *hajj* finances. The analysis also extends to the role

of multi-stakeholder interactions reflected in official reports, regulatory documents, and academic literature that shape the *hajj* ecosystem.

This study employs a qualitative research design with a focus on documentary research (Lune & Berg, 2017). A qualitative approach is appropriate because the research seeks to understand meanings, processes, and institutional relationships rather than measure numerical outcomes. The documentary method is used since the research relies entirely on written materials—academic studies, government regulations, financial reports, and institutional documents—without conducting fieldwork, interviews, or observations.

The data in this study consist solely of primary data derived from documents and literature. These include official BPKH reports, government regulations on *hajj* and Islamic finance, financial statements of relevant institutions between 2019 and 2023, and scholarly articles discussing digitalisation, Shariah-compliant e-commerce, and Islamic financial management. Because all sources are documentary in nature, no secondary data were used.

The data collection process was conducted through systematic literature review and document analysis. Relevant documents were identified, selected, and reviewed to capture information about BPKH's strategies, policies, and practices in *hajj* fund management. This process ensured that the research is grounded in authoritative and credible sources such as institutional reports, regulatory texts, and peer-reviewed publications.

Data analysis followed a multi-step process. First, thematic analysis was applied to familiarise with the collected documents, generate initial codes, and cluster them into thematic categories representing operational dynamics of BPKH (Braun & Clarke, 2013). Second, Interactive Qualitative Analysis (IQA) was used to construct systemic maps showing interconnections among variables and stakeholders as reflected in the literature (Northcutt & McCoy, 2004). Third, methodological triangulation was applied by cross-checking insights across multiple documentary sources and theoretical frameworks (Denzin, 2012). The validity of findings was strengthened through cross-verification with regulatory documents and previous studies in Islamic finance (Lincoln & Guba, 1985). This methodological approach not only identifies managerial patterns of BPKH's digital transformation but also reveals its broader socio-economic implications for pilgrims, financial institutions, and business partners as represented in the literature.

## RESULTS AND DISCUSSION

### Digitalization and E-Commerce: *Hajj-Umrah* Business Opportunities in the Age of Technology

Indonesia possesses substantial financial potential within the *hajj-umrah* ecosystem. According to Nurohman et al. (2023), an additional 450,000 prospective pilgrims each year could generate IDR 10.98 trillion in new funds. The total *hajj* fund managed by BPKH as of October 31, 2023, reached IDR 165.94 trillion. Fluctuations in the *BI rate* influence investments in Shariah-compliant instruments such as gold and Islamic bank deposits (Nurohman, 2022). Meanwhile, the Kingdom of Saudi Arabia (KSA) targets 30 million pilgrims by 2030 as part of *Saudi Vision 2030* (Kompas, 2023). This initiative is supported by service digitalization through the *Nusuk* application, which facilitates travel planning, accommodation booking, and payments (Ardiana et al., 2023).

Shariah-compliant e-commerce business models are recommended in the form of *Consumer-to-Consumer (C2C) classified*, which are considered cost-effective in terms of infrastructure and human resources (Subhan et al., 2023). Collaboration between BPKH and domestic digital platforms such as

Tokopedia Salam and international ones such as *Nusuk* is believed to diversify revenue streams while maintaining measured risks (Alamsyah, 2023). Competition among *hajj* and *umrah* travel agencies in Indonesia is relatively high (Hidayat et al., 2023), with trust, service quality, and pilgrim satisfaction highlighted as key factors (Nazir et al., 2023). AMPHURI reported that more than 1,200 licensed Special Hajj Organizers (*PIHK*) are actively operating in Indonesia.

The report by Arbaa Consultant (2023) shows that digitalization allows *hajj* and *umrah* service providers to reduce operational costs through *C2C marketplace* platforms. Similarly, Mäkiö et al. (2018) emphasize that e-commerce use can both expand the consumer base and reduce distribution costs. Anggarani and Nurzaman (2020) further note that Shariah-based transactions through e-commerce enable BPKH to maintain halal principles in managing *hajj* funds.

The digital payment sector is also developing rapidly. Bank Muamalat launched services such as *QRIS*, e-wallets, and mobile banking as part of its digitalization strategy (Bank Muamalat, 2023). The implementation of digital payment systems has been proven to enhance banks' financial performance (Rahayu et al., 2022). BSI introduced a super-app offering registration, savings, and transaction services for pilgrims. Nevertheless, Astuti (2022) observed persistent challenges related to data security and the adoption of internet banking among customers in Bandung. Moreover, *Internet of Things (IoT)* technologies have begun to be applied in *hajj* management, including transportation sensors for pilgrims and logistics tracking (Shambour & Gutub, 2022).

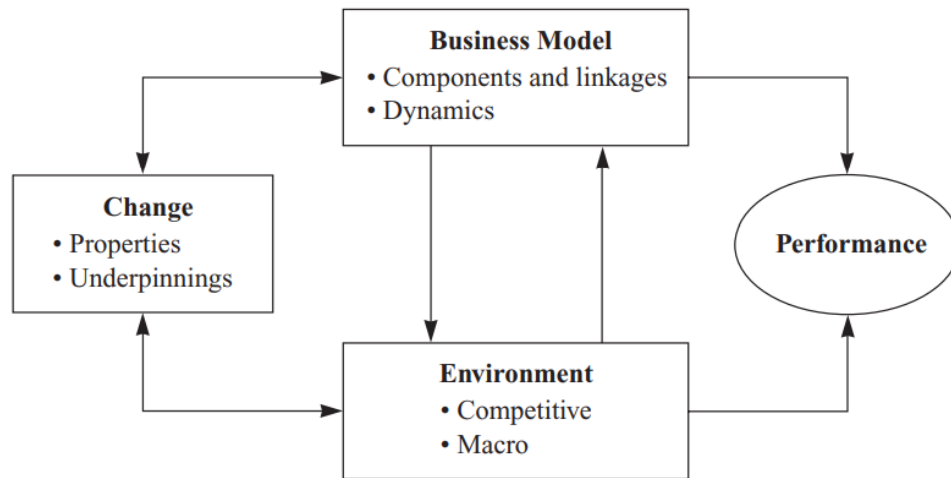
Supportive regulations and fatwas also reinforce this transformation. *Permendag* No. 31/2023 confirms that electronic trade must comply with Shariah. Fatwa DSN-MUI No. 144/DSN-MUI/XII/2021 emphasizes the prohibition of *riba*, *gharar*, and *maysir* in digital transactions. Masnita et al. (2021) confirm that e-wallet transactions are halal as long as they comply with Shariah principles. Gaffar et al. (2023) add that the popular dropshipping model in e-commerce can be applied by BPKH as a legally valid trade strategy under Islamic law.

Technological innovation is also evident in Saudi Arabia. Abalkhail and Al Amri (2022) document the use of AI-based risk management during the COVID-19 pandemic to regulate pilgrim movement. Bhuiyan et al. (2022) demonstrate that Big Data analytics enhance the understanding of pilgrims' needs and improve service satisfaction. Alfinanto et al. (2024) confirm that the adoption of *Social, Mobile, Analytics, and Cloud (SMAC)* technologies strengthens value propositions, customer segments, and resource utilization in religious service sectors.

Domestic collaborations are also underway. PT Bayu Nusaba Arqom developed integrated systems for registration, program reservations, and payments (Hidayatullah, Putra, & Qoyim, 2014). PT Shaza Amanah Wisata, under Habib Ahmad bin Hasan Alaydrus, promotes the development of Shariah-compliant digital payment applications (Alaydrus, 2023). Umrah Al Bahjah Tour & Travel adopted an *Integrated Marketing Communication (IMC)* strategy to promote *umrah* services via digital platforms (Aeni, 2022).

Despite such progress, Indonesia still records low Islamic financial literacy and inclusion levels, at only 8.11% and 11.06% respectively (Nurfalah & Rusydiana, 2019). The integration of Islamic fintech solutions such as *LinkAja Syariah* is expected to raise these figures. Kusuma and Asmoro (2020) add that collaboration between Islamic banks and fintech companies can generate innovative products without violating Shariah principles.

The narrative findings above can be illustrated through the following model:



**Figure 1. Framework of Determinants of Business Performance in the Hajj-Umrah Digitalization Ecosystem**

Source: Afuah & Tucci (2003)

The *Determinants of Business Performance* framework proposed by Afuah and Tucci (2003) in Figure 1 illustrates the interrelation between *change*, *business model*, *environment*, and *performance*. In the context of *hajj-umrah* management, digitalization (*change*) acts as the primary driver that generates new business models, such as the implementation of *Consumer-to-Consumer (C2C) marketplace*, BSI's *super-app*, digital payment services based on *QRIS* and e-wallets, as well as cross-platform collaborations like *Nusuk* and *Tokopedia Salam*. These changes not only reflect technological adaptation but also transform the governance of *hajj* funds and pilgrim services to become more efficient, transparent, and compliant with Shariah principles.

Furthermore, these new business models interact with a competitive *environment*, characterized by more than 1,200 licensed *PIHK* competing in the *hajj-umrah* service market, as well as regulatory influences such as *Saudi Vision 2030*, *Permendag* No. 31/2023, and *DSN-MUI Fatwa* No. 144/DSN-MUI/XII/2021. The combination of innovative business models and environmental pressures ultimately leads to measurable improvements in *performance*, reflected in cost efficiency, financial transparency, increased levels of Shariah financial literacy and inclusion, and higher pilgrim satisfaction. Thus, the Afuah and Tucci framework helps explain that digitalization is not merely about technological adoption but represents a structural transformation that strengthens the competitiveness of Indonesia's *hajj-umrah* ecosystem in the modern era.

Based on the collected data, several important patterns can be identified. These patterns highlight the direction of business transformation in Indonesia's *hajj-umrah* sector and reaffirm the linkages between technological developments, Shariah regulations, and the increasingly competitive religious market.

The first pattern indicates that digitalization consistently functions as a catalyst for change in *hajj-umrah* business models, especially through the adoption of Shariah-compliant e-commerce (*C2C marketplace*), Islamic banking super-apps, and the integration of digital payments. This pattern shows that technology does not merely support operations but fundamentally restructures businesses by lowering costs, expanding consumer reach, and increasing transparency. It aligns with global trends that associate

digitalization with efficiency and financial inclusion, reinforced by regulations and fatwas ensuring that transactions remain in accordance with Shariah principles.

The second pattern highlights that competitive and regulatory environments drive continuous innovation. The intense competition among more than 1,200 PIHKs in Indonesia, the Saudi Vision 2030 target to serve 30 million pilgrims, and domestic regulations such as *Permendag* No. 31/2023 create pressures that require *hajj* and *umrah* organizers to constantly adapt. This situation suggests that business success depends not only on technological adoption but also on the ability to maintain pilgrim trust, deliver high-quality services, and ensure compliance with Shariah standards. The preliminary conclusion is that digitalization in the *hajj-umrah* ecosystem is not simply a technological trend but a transformation strategy that enhances competitiveness and overall service performance.

### ***Hajj, Umrah, and the Business Potential of Banking in the Digital Era***

The establishment of the BPKH through Law No. 34/2014 underscores the importance of *hajj* governance that is transparent, efficient, and compliant with Shariah principles. The *hajj* funds managed by BPKH are not only used for the organization of the pilgrimage but are also invested productively for the welfare of Muslims, such as in social projects and disaster relief programs (Hulwati et al., 2023; Suhartini & Nuzulul Atiah, 2022). In the context of organization, there are two types of *hajj*: the Regular *Hajj*, managed by the government, and the Special *Hajj*, managed by PIHK. The business processes of Special *Hajj* and *umrah* include the procurement of logistics, ritual guidance, visas, flight tickets, and accommodation (Febrianti et al., 2023). The *hajj* quota system serves as the basis for pilgrim distribution, with BPKH playing a role in providing tickets and accommodation through digital platforms that are also integrated with the Saudi Arabian government and the Nusuk application to streamline pilgrim journeys (Purwito et al., 2022).

The development of digital banking in Indonesia has further driven the transformation of *hajj* and *umrah* services. Data from Bank Indonesia indicate that e-money transactions grew by 10.34% (yoy) to IDR 116.54 trillion, digital banking transactions reached IDR 15,148.71 trillion with 12.83% growth, and QRIS transactions surged 87.90% (yoy) to IDR 56.92 trillion, primarily supported by MSMEs. Conversely, conventional transactions using ATMs, debit cards, and credit cards declined by 4.94% (Irawan et al., 2022). This situation demonstrates significant potential for BPKH to leverage digital payment systems while opening opportunities for collaboration with international financial institutions such as ISDB, ADB, and Islamic banks in Saudi Arabia to support Shariah-compliant investments and increase working capital for PIHK/PPIU. Such collaborations also foster innovation, including the *Hajj* Bank feature, which simplifies pilgrim access to digital financial services (Altwijry et al., 2023).

Although levels of Islamic financial literacy and inclusion in Indonesia remain low, at 8.11% and 11.06% respectively, digitalization is considered a viable pathway to expand access to Islamic financial services (Nurfalah & Rusydiana, 2019). Arbaa Consulting (2023) emphasizes that digitalization of Shariah fund management and the growth of Islamic fintech can increase transparency while promoting interest-free financial practices (Setiawan et al., 2021; Winarno, 2012). Innovations in Islamic banking are also evident in Bank Muamalat's launch of the Muamalat DIN application featuring *Hajj* Bank (Bank Muamalat, 2023), and BSI's introduction of a super-app for *hajj* registration and transactions (Bank Syariah Indonesia (BSI), 2023). Nonetheless, challenges persist, such as the low adoption of internet banking, which affects the performance of Islamic banks (Astuti, 2022).

From the regulatory perspective, *Permendag* No. 31/2023 reinforces the requirement that digital transactions adhere to Shariah principles. DSN-MUI Fatwa No. 144/2021 on Shariah marketplaces

emphasizes the prohibition of *riba*, *gharar*, and *maysir* in digital transactions (TIM DSN MUI, 2023b). Shariah-based trading models such as dropshipping, *bai' al-salam*, and *wakalah* are also deemed valid under Islamic law and can be applied by BPKH to reduce costs and strengthen transparency (AUGUSNA & ROZALINDA, 2023; Rodliyah et al., 2020). The use of QRIS and e-money has become increasingly relevant with the growing trend of cashless transactions in both Indonesia and Saudi Arabia (Meilani et al., 2022).

Overall, these findings affirm that digital transformation through Islamic fintech, Islamic financial regulations, and cross-institutional collaboration offers significant opportunities to strengthen the *hajj* and *umrah* ecosystem. Digitalization has proven not only to enhance efficiency but also to reinforce accountability in *hajj* fund management, expand access to services for pilgrims, and support the competitiveness of Indonesia's Islamic finance industry in the global era.

**Table 1. Key Data on the Digitalization of *Hajj*, *Umrah*, and Banking Business**

Aspect		Key Data
Hajj Funds Managed by BPKH		IDR 165.94 trillion (as of 31 October 2023)
Additional Funds	Annual	IDR 10.98 trillion from ±450,000 new prospective pilgrims
Growth in Transactions	Digital	<i>E-money</i> : IDR 116.54 trillion (+10.34% yoy); Digital Banking: IDR 15,148.71 trillion (+12.83% yoy); <i>QRIS</i> : IDR 56.92 trillion (+87.90% yoy)
Decline in Conventional Transactions		ATM/Debit/Credit Cards: IDR 2,041.72 trillion (−4.94% yoy)
Islamic Financial Literacy & Inclusion		Literacy: 8.11%; Inclusion: 11.06%
Islamic Banking Innovations		<i>Muamalat DIN</i> – “Hajj Bank” feature; BSI <i>Super-App</i> for hajj
Shariah Regulations		<i>Permendag</i> No. 31/2023; DSN-MUI Fatwa No. 144/2021
Shariah Business Models		<i>Dropshipping</i> , <i>bai' al-salam</i> , <i>wakalah</i> – valid under <i>fiqh</i>

From Table 1, at least three main patterns emerge. First, the enormous potential of *hajj* funds offers BPKH a significant opportunity to develop a Shariah-based digital financial ecosystem. With managed funds reaching IDR 165.94 trillion and an additional IDR 10.98 trillion per year, digitalization serves as an essential instrument to enhance efficiency and transparency.

Second, the shift in transaction patterns shows a strong movement toward digital modes. The substantial growth in *e-money*, digital banking, and *QRIS* transactions contrasts sharply with the decline in conventional transactions, underscoring the urgency of adopting digital financial services to support the organization of *hajj* and *umrah*.

Third, a gap remains in Islamic financial literacy and inclusion, which are still relatively low (8.11% and 11.06%, respectively). At the same time, various innovations have emerged, such as the BSI *Super-App* and the *Muamalat DIN* “Hajj Bank” feature. Formal regulations such as *Permendag* No. 31/2023 and DSN-MUI Fatwa No. 144/2021 also provide legitimacy for Shariah e-commerce practices, including



*dropshipping*, *bai' al-salam*, and *wakalah*. Collectively, the data highlight that digitalization is not merely a technological trend but a strategic necessity to strengthen the competitiveness of Islamic banking, enhance pilgrim trust, and ensure that *hajj* funds remain safe, transparent, and Shariah-compliant.

### Business Potential of Registration and Licensing

Digitalization has become an essential element in improving the efficiency and accessibility of *hajj-umrah* services in Indonesia, particularly in Java, which has the largest number of prospective pilgrims. The implementation of *All in One Information Technology* in Indramayu demonstrates that although digital transformation is promising, there are internal and external barriers to socialization and implementation (Ibrahim, 2023). At the national level, the Ministry of Religious Affairs successfully developed the *SI-MASHAJI* application to digitally manage *hajj* dormitories, provide accessible information, and enhance institutional accountability (Hendrizal & Frinaldi, 2023). Another application, *SISKEHAT Gen 2.0*, also facilitates smooth financial transactions between BPKH and designated banks, thereby strengthening transparency in fund management (Sheila Pinasti et al., 2022). Furthermore, the integration of Shariah-compliant *e-commerce* has simplified independent *hajj* registration while adhering to the principles of *fiqh muamalah*. This integration simultaneously strengthens Islamic financial literacy through investment education features in the capital market (Maskhuroh & Fadl'laa, 2022).

Collaboration between BPKH and various digital platforms, including *Nusuk*, has expanded coordination to Saudi Arabia and revealed significant business potential in *hajj* registration and licensing (Mansori & Maatuk, 2023). A digital distribution model based on *dropshipping* and supported by Shariah contracts such as *bai' al-salam* and *wakalah* has accelerated logistics and registration services (TIM DSN MUI, 2023a). This transformation aligns with global trends in logistics digitalization, such as the application of *Electronic Data Interchange (EDI)* systems, which reduce costs and enhance supply chain efficiency (Fürst & Schmidt, 2001). In the context of pilgrim services, the *SISKOHAT* system has proven to improve the accountability of *hajj* fund management by reducing risks of corruption and mismanagement. Additional applications such as *Haji Pintar* and *Nusuk* further encourage transparency in pilgrimage planning while creating new business opportunities in Islamic finance and halal products (BPKH, 2023).

This digital transformation has gained strong legitimacy from DSN-MUI fatwas, particularly concerning Shariah-based electronic marketplaces, which have encouraged the development of applications such as *SISKOPATUH* and *SI-MASHAJI* (TIM DSN MUI, 2023b). The fatwas ensure that technological integration remains in line with Shariah principles by prohibiting *riba*, *gharar*, and *maysir*, while emphasizing transparency. This is consistent with broader trends in adapting digital financial technologies, including digital currencies, which must comply with Shariah rules (Chowdhury & Razak, 2019). Contemporary Indonesian scholars also play a vital role by providing *fiqh* legitimacy for service digitalization, thereby encouraging new Shariah-based business opportunities (Djakfar, 2017). Moreover, the adoption of APIs for account opening, registration, and data management by BPKH indicates a strong trend toward full-scale digitalization, capable of reducing registration duplication and increasing efficiency at Ministry of Religious Affairs offices (Hidayat et al., 2023; Singa et al., 2022).

From the perspective of health and logistics, the integration of *IoT*-based services is increasingly crucial, such as for tracking pilgrim transportation and developing sustainable *hajj* logistics systems (Shambour & Gutub, 2022). The development of applications like *SI-MASHAJI* also assists in managing official permits (*tasreh*) from Saudi authorities, strengthening international cooperation and ensuring transparency. At the same time, digital financial innovations by Islamic banks also support this ecosystem. For example, Bank Muamalat has integrated *hajj* registration services into its mobile application and

developed the *Digital Islamic Network (DIN)* to enhance service quality and financial inclusion (Cahyaningtyas & Fauza, 2023). These transformations are consistent with global *Islamic fintech* trends, where digital innovations reduce physical transaction costs and enhance competitiveness (Ajouz & Abuamria, 2023; Ansori, 2019).

Overall, the digitalization of *hajj* registration and licensing not only improves efficiency and transparency but also expands business opportunities in Islamic finance, logistics, and halal products. Regulatory support through *Permendag* and DSN-MUI fatwas, combined with the adoption of technologies such as *SISKOHAT*, *SI-MASHAJI*, *Nusuk*, and Shariah *fintech*, demonstrates that digital innovation is a strategic instrument for BPKH to address the challenges of modernizing *hajj* services while ensuring compliance with Shariah principles.

**Table 2. Map of *Hajj-Umrah* Registration and Licensing Digitalization**

Application/Instrument	Main Function	Contribution to Efficiency & Transparency
<i>SI-MASHAJI</i>	Management of <i>hajj</i> dormitories & licensing ( <i>tasreh</i> )	Simplifies service and official permit management, enhances accountability
<i>SISKEHAT Gen 2.0</i>	Financial transactions between BPKH and designated banks	Accelerates transaction flow & strengthens financial transparency
<i>SISKOHAT</i>	<i>Hajj</i> registration and cancellation	Reduces data duplication, improves <i>hajj</i> fund accountability
<i>Haji Pintar</i>	Information & worship planning	Provides real-time access to information for pilgrims
<i>Nusuk</i>	Coordination of <i>hajj</i> services with Saudi Arabia	Expands international access & improves the pilgrim experience
<i>SISKOPATUH</i>	Supervision of <i>KBIH/PIHK</i>	Increases transparency and control of <i>hajj</i> services
Islamic Banks & <i>Fintech</i> ( <i>DIN</i> , <i>LinkAja Syariah</i> , <i>e-wallet</i> )	Payment & Islamic financial literacy	Supports cashless transactions under Shariah and expands inclusion

From Table 2, three dominant patterns can be identified. First, operational efficiency is strengthened through the digitalization of registration and transactions. Applications such as *SISKOHAT* and *SISKEHAT Gen 2.0* have proven to reduce data duplication, accelerate transaction flows, and increase financial accountability (Sheila Pinasti et al., 2022). This pattern shows that technology is not merely an administrative tool but also a means of reducing mismanagement risks and expediting services for pilgrims.

Second, there is a clear trend toward cross-system and cross-country integration, as demonstrated by *Nusuk*, which connects domestic services with Saudi Arabia's systems (Mansori & Maatuk, 2023). This

integration expands BPKH's service coverage, facilitates international coordination, and enhances pilgrim satisfaction by providing a more transparent and standardized worship experience.

Third, there is an emerging direction toward Islamic financial literacy and inclusion. *Fintech* applications such as *LinkAja Syariah* or the *Digital Islamic Network (DIN)* by Bank Muamalat facilitate cashless payments while simultaneously educating pilgrims about halal transactions (Bank Muamalat, 2023; Nurfalah & Rusydiana, 2019). This pattern is crucial given Indonesia's relatively low level of Islamic financial literacy, indicating that digitalization also serves as an educational medium.

The preliminary conclusion from these patterns is that the digitalization of *hajj* registration and licensing not only improves BPKH's internal efficiency but also expands external accessibility through cross-platform and cross-country collaboration, while strengthening Shariah legitimacy through regulatory and DSN-MUI fatwa support. Thus, this digital ecosystem is not merely a technical solution but a sustainable strategy for transforming *hajj-umrah* services.

### Business Potential of Direct Investment in KSA

The potential for direct investment by BPKH in the Kingdom of Saudi Arabia (KSA) has a strong foundation through Law No. 34/2014, which regulates business management, capital participation, and international partnerships. Government-to-government (G-to-G) and business-to-business (B-to-B) cooperation models are considered strategic in reducing investment risks while enhancing the quality of *hajj* services. This aligns with the role of the Foreign Investment and Cooperation Sector (FII) in improving the efficiency of BPIH, upholding prudence, and ensuring benefits for Muslims (Akinpelu et al., 2023; Rain & Khawaja, 2023). The implementation of such strategies can foster collaboration in the hospitality, transportation, and catering sectors, which constitute the primary needs of *hajj-umrah* pilgrims, while simultaneously optimizing *hajj* funds to remain productive and Shariah-compliant. A significant opportunity also lies in the establishment of a BPKH business unit in KSA that could manage hotels, provide transportation services, and operate as an airline ticket reseller for Indonesian pilgrims. This step is expected to stabilize hotel and flight ticket prices, reduce dependency on third parties, and open more competitive negotiation opportunities (Maidawati, 2023).

In addition, substantial opportunities arise from integration with the rapidly expanding Shariah e-commerce ecosystem in KSA. Consumer-to-Consumer (C2C) classified and Business-to-Business (B2B) models are recommended as they enable income diversification with minimal infrastructure requirements (IDeA Asosiasi E-Commerce Indonesia, 2023; Subhan et al., 2023). Digitalization trends in Saudi Arabia show that e-commerce is projected to dominate 80% of the retail sector by 2030, driven by increased internet penetration and changing consumer behavior in the post-COVID-19 era (Badahman & Balfaqih, 2023). Collaboration with international platforms such as *Nusuk* not only broadens the market but also lowers investment risks by utilizing channels that are already established both technologically and regulatorily (Navisa et al., 2023). At the same time, BPKH can leverage opportunities for collaboration with global Islamic banks and international financial institutions such as ISDB to expand halal transactions, including the application of *wakalah*, *qard*, and *wakalah bil ujrah* contracts, which have already received DSN-MUI legitimacy (HANNANI, 2023; Maulida et al., 2020). Thus, digitalization through e-commerce and Islamic fintech functions not merely as an operational tool but as a fundamental foundation for building trust and transparency in cross-border transactions.

The digital transformation in Saudi Arabia also provides critical lessons for BPKH. The implementation of Smart Media Technologies (SMT) such as *hajj* applications, e-wristbands, and *Tawakkalna* during the COVID-19 pandemic demonstrated how technology can strengthen logistics

management, enhance security, and improve pilgrims' social experience (Bisanzio et al., 2022; Qurashi & Sharpley, 2018). However, digitalization also raises debates about its potential to reduce the spiritual essence of the *hajj*. In this context, BPKH must design strategies that balance service efficiency with the spiritual values of worship. Emphasis on *maqāṣid al-sharī'ah* is crucial to ensure that digitalization and direct investment are not solely business-oriented but also preserve the primary purpose of worship. The DSN-MUI fatwa on Shariah marketplaces underscores the prohibition of *riba*, *gharar*, and *maysir*, while promoting transparency, thereby strengthening BPKH's position in validating Shariah-based business practices in KSA (TIM DSN MUI, 2023c).

Furthermore, the growth of Islamic fintech and the integration of digital systems in Saudi Arabia's tourism sector are aligned with Saudi Vision 2030, which targets economic diversification beyond oil dependency. Cross-sector collaboration, including hospitality, transportation, and catering, is regarded as a key strategy to expand BPKH's revenue streams. Bank Muamalat, for instance, emphasizes the importance of international collaboration and digital transformation in *hajj-umrah* payment systems, reflecting a global shift toward inclusive, fast, and app-based financial services (Altalhi, 2023). These developments indicate that BPKH's direct investment opportunities in KSA are not merely an additional option but a strategic necessity to enhance service efficiency, stabilize costs, and expand the benefits of *hajj* funds. By integrating digitalization, e-commerce, and Shariah principles, BPKH can position itself as a key player in the global *hajj* ecosystem while delivering tangible benefits to the welfare of the Muslim community.

**Table 1. Direct Investment Potential of BPKH in Saudi Arabia (KSA)**

Investment Sector	Cooperation Model	Platform/Instrument	Potential Benefits	Risks/Challenges
Hospitality & Transportation	G-to-G, B-to-B, BPKH Business Unit in KSA	<i>Nusuk</i> , BPKH <i>Ltd.</i>	Hotel and ticket price stability, logistics efficiency, improved service capacity	High competition, KSA regulations, quality service demands
Shariah Commerce	E-C2C Classified, B2B, Marketplace	<i>Nusuk</i> , Tokopedia Salam, KSA platforms	Income diversification, transaction transparency, global market reach	Digital infrastructure, cross-border Shariah compliance
Fintech Payments	& Collaboration with global Islamic banks & fintech	QRIS, E-wallet, <i>wakalah</i> , <i>qard</i>	Inclusive financial access, improved financial literacy,	Data security risks, low adoption of digital literacy

			efficient <i>hajj</i> payments	
Catering Services	B-to-B with local & international providers	Digital logistics systems, IoT, AI	Improved food quality for pilgrims, supply chain efficiency, opportunities for Indonesian MSMEs	Dependence on import regulations, strict KSA standards
Hajj Infrastructure & IT	Cooperation with KSA government & private sector	Smart Media Tech, e-wristband, API	Transparency, accountability, integrated pilgrim data	High investment costs, potential reduction of spiritual aspects

From the data in Table 1, at least four key patterns emerge in the potential for BPKH's direct investment in KSA. First, there is a tendency toward digital integration as the core foundation of *hajj* services, ranging from the use of platforms such as *Nusuk* and C2C marketplaces to the adoption of IoT and AI. Digitalization not only supports efficiency but also strengthens transparency, security, and service reach, although it continues to face challenges such as data security risks and concerns about diminishing the spiritual dimensions of the pilgrimage (Qurashi & Sharpley, 2018).

Second, there is a clear pattern of sectoral diversification. Investment opportunities extend beyond hospitality into transportation, catering, e-commerce, and fintech-based financial services. This diversification reflects a risk mitigation strategy, ensuring that BPKH does not depend solely on one sector but instead opens multiple Shariah-compliant revenue streams (Akinpelu et al., 2023).

Third, cross-border cooperation models dominate, particularly through G-to-G and B-to-B schemes. This indicates that investments in KSA cannot be pursued independently but require strategic collaboration with governments and local service providers. Such arrangements pose challenges in ensuring compliance with cross-jurisdictional legal, regulatory, and Shariah frameworks (Rain & Khawaja, 2023).

Fourth, the data emphasize the centrality of Shariah compliance and fatwa legitimacy. The implementation of DSN-MUI fatwas on Shariah marketplaces, along with contracts such as *wakalah*, *qard*, and *wakalah bil ujah*, demonstrates that digital innovation must remain aligned with *fiqh muamalah* to gain public acceptance and maintain trust (Maulida et al., 2020).

In summary, BPKH's direct investment in KSA presents vast potential to enhance efficiency, diversify revenue, and strengthen the global competitiveness of *hajj* services. However, these opportunities can only be fully realized if supported by digital integration, international collaboration, and strong adherence to Shariah principles and cross-border regulatory frameworks.

### Implementation of Digitalisation of BPKH Business Processes

The implementation of digitalisation of BPKH's business processes in the implementation of e-commerce at the BPKH involves a consumer-to-consumer (C2C) model with Classified, focusing on the 5-

S guidelines (Coordination, Commerce, Society, Content, Communication) (Sampelolo et al., 2023). This model integrates stakeholders such as the governments of Indonesia and Saudi Arabia, pilgrims, and service providers, ensuring compliance with sharia investment principles and reduced costs for pilgrims while maintaining quality (Mansori & Maatuk, 2023). Profits are generated through commissions, advertising, markups, and referrals, following sharia contracts such as *as al-Samsara*, *wakalah bi al-ujrah*, and *Ju'alah*. Community engagement, personalised content, and effective communication channels such as WhatsApp and email are essential for successful implementation (Meyliana et al., 2023).

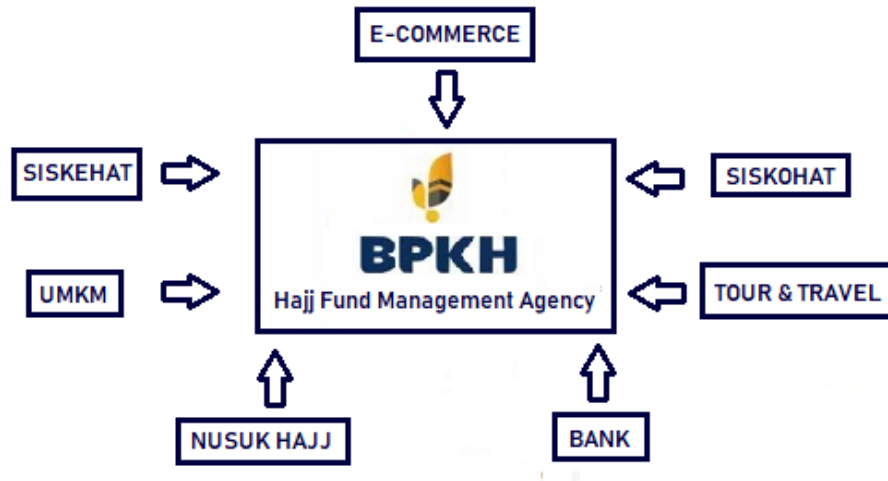


Figure 2. BPKH Digital Platform Integration

Source: Processed by the author

The stages of digitisation development, as outlined in the context, include defining the mission, strategy and roadmap; setting objectives and priorities; identifying technology components and execution sequences; determining influence factors and risk assessments; and establishing digitisation methods (Rumyk & Melnichenko, 2023). The integration of these elements is critical for organisations to effectively navigate the complexities of digital transformation, adapt to the evolving digital landscape and maximise the benefits of technological advancements.

The DSN-MUI team's dropship model, which eliminates the need for physical storage, aligns with the Consumer-to-Consumer (C2C) and Classified concepts in the digital ecosystem, effectively connecting stakeholders such as pilgrims, service providers, and the government. The model supports the 5-S guidelines—coordination, commerce, community, content, and communication—by utilising digital platforms to enhance stakeholder engagement and transparency, essential for maintaining trust and compliance with Shariah principles in transactions (TIM DSN MUI, 2023a). The application of Shariah agreements such as *al-samsarah* and *wakalah bi al-ujrah* further enhances efficiency and trust in digital services by ensuring ethical and transparent transactions, which is important in a digital market where customer expectations and lifestyles are rapidly evolving (Shipra & Janet, 2023). The emphasis on stakeholder engagement is echoed in the literature, highlighting the importance of building relationships and trust within the business ecosystem, which is critical for long-term success and ethical business practices (Barnes & Westrenius, 2020).

The DSN MUI's Onlineshop Fatwa emphasises the integration of digital technology to improve efficiency and transparency in managing *hajj* funds, in line with the broader trend of digital transformation in Islamic finance practices (TIM DSN MUI, 2023c). BPKH's development of a web-based *Digital Transformation Matrix* application, utilising *PHP*, *CodeIgniter*, and *MySQL*, is a significant step towards real-time monitoring and improved financial management for *hajj* services. This innovation is expected to streamline operations and provide easier financial management for prospective pilgrims, reflecting the growing demand for halal and shariah-compliant financial products in Indonesia (Nurlaela et al., 2020). The successful digital transformation of institutions such as BAZNAS, which manages zakat, infaq, and shadaqah, demonstrates the potential of digital technology to improve the efficiency and reach of sharia financial services (Hartono, 2022).

The development of a Shariah-based e-commerce platform using a C2C model with a confidential approach to manage *hajj* funds aims to improve efficiency and transparency while complying with Shariah principles. The platform integrates various stakeholders, including the governments of Indonesia and Saudi Arabia, pilgrims, and service providers, ensuring compliance with Islamic finance principles such as *al-samsarah* and *wakalah bi al-ujrah*. The role of the Shariah Supervisory Board, as highlighted in the context of Islamic Financial Institutions, is crucial in maintaining Shariah compliance by ensuring that financial transactions do not involve prohibited elements such as *riba*, *maysir*, and *gharar*, and by aligning with fatwas issued by the DSN-MUI (Hidayatullah, 2022). The application of Islamic business ethics, as seen in the marketing communications of *hajj* and *umrah* travel agencies, emphasises principles such as *Shiddiq*, *Istiqamah*, *Fathanah*, *Amanah*, and *Tabligh*, which are essential for maintaining trust and transparency in the services provided (Prasetyo & Pratiwi, 2016).

Hilmi Adrianto's (2023) proposal to BPKH to develop an application that facilitates travel organisers in obtaining official permits and accessing logistics needs efficiently is in line with the broader trend of digital transformation across the logistics and tourism sectors. The integration of various stakeholders into one organised digital ecosystem is crucial, as highlighted by Kozlov et al., who emphasise the importance of platform solutions in creating a unified logistics ecosystem (Kozlov et al., 2021). This approach is further supported by Hofman and Bastiaansen, who discuss the development of a smart logistics ecosystem through a system-of-systems approach, which improves decision-making and coordination among stakeholders by utilising real-time data sharing and interoperability (Hofman & Bastiaansen, 2014).

Firman M. Nur's proposal to develop a digital platform for *hajj* and *umrah* services is in line with current trends and challenges in the industry, as highlighted in the paper provided (Nur, 2023). The integration of a C2C platform with a Confidential approach can streamline the registration and booking process, similar to the effectiveness seen in the Integrated Hajj Information and Computerisation System (*SISKOHAT*), which is crucial in efficiently managing *hajj* registrations despite staff limitations. Collaboration with BPKH and the Saudi government, potentially through applications such as Nusuk, could improve service delivery while adhering to Shariah principles, ensuring that transactions remain ethical and transparent. This is particularly important as the *hajj* and *umrah* services industry has faced significant disruptions, such as those caused by the COVID-19 pandemic, highlighting the importance of Enterprise Risk Management (ERM) in maintaining business continuity (Ekasari et al., 2024).

BPKH's focus on digitalisation is also reflected in the optimisation of the zakat management system, which improves service efficiency and public trust, thereby increasing the benefits of zakat for poverty alleviation (Santoso, 2019). This digital and sharia approach not only supports effective digitisation but is

also in line with the marketing strategies of institutions such as BPR Syariah Amanah Ummah, which utilise both online and traditional media to attract investment (Saputra et al., 2022).

Bank Muamalat's emphasis on collaboration between stakeholders to enhance digitalisation is in line with broader trends in the Islamic finance sector, particularly in the management of *hajj* funds (Bank Muamalat, 2023). The integration of Shariah-based C2C platforms can significantly improve efficiency and transparency, utilising contracts such as *al-samsarah* and *wakalah bi al-ujrah* to ensure compliance with Islamic principles (Basrowi & Julianas, 2020). Digitalisation of the Islamic economy, as highlighted by Ansori, facilitates rapid economic growth by utilising information and communication technology, which can be applied to improve interaction with pilgrims and create new business opportunities for BPKH (ANSORI, 2016).

The Indonesian E-Commerce Association's suggestion to BPKH to adopt a C2C model with a Secret approach for the digitisation of *hajj* services is in line with the broader trend of digital transformation in the Indonesian economy, particularly in e-commerce and financial services (IDeA Asosiasi E-Commerce Indonesia, 2023). The integration of Shariah-compliant contracts such as *al-samsarah* and *wakalah bi al-ujrah* into digital platforms can improve operational efficiency and service quality while complying with Islamic principles. This approach is supported by the rapid growth of e-commerce platforms such as Shopee and Tokopedia, which have become an integral part of the digital economy in Indonesia, fuelled by increased internet usage and adoption of e-wallets such as Ovo and Gopay. In addition, the effectiveness of *hajj* ritual guidance services, as demonstrated by the Ministry of Religious Affairs in Eastern Indonesia, underscores the potential benefits of structured digitalisation in improving service delivery and ensuring that pilgrims achieve the desired spiritual outcomes.

## Discussion

This study found that digitalization creates significant opportunities to strengthen *hajj* fund governance through four strategic domains: (1) digitalization and e-commerce in *hajj-umrah* services, (2) integration of Islamic banking and *fintech* for payment systems and fund management, (3) digital transformation of *hajj* registration and licensing, and (4) direct investment potential in Saudi Arabia through Shariah-based business models. The implementation of platforms such as *Nusuk*, BSI's super-app, the Muamalat DIN application, and innovations like *SISKOHAT* and *SI-MASHAJI* illustrates a new direction in *hajj* governance that is more efficient, transparent, and accountable. On the other hand, challenges remain, including low Islamic financial literacy, risks of digital security, and the potential reduction of the spiritual dimension of worship due to the dominance of technology.

These findings emerge because digitalization enables cost efficiency, improved transparency, and diversification of services that were previously difficult to achieve through conventional methods. The adoption of Shariah-compliant Consumer-to-Consumer (C2C) e-commerce models, for example, reduces infrastructure costs and expands pilgrims' access to official services while ensuring compliance with Islamic principles. The growth of *fintech* and digital payment systems has also been driven by the surge in cashless transactions in Indonesia, creating opportunities for integration into the *hajj* ecosystem. Cross-border collaboration with Saudi Arabia through *Nusuk* strengthens coordination, while regulations such as MOT Regulation No. 31/2023 and the DSN-MUI Fatwa No. 144/2021 provide religious and legal legitimacy to these practices.

Compared to previous research, this study contributes new insights by directly linking digitalization with *hajj* fund governance. Earlier works on the digital economy (Haqqi, 2023; Junaedi & Arsyad, 2023; Susilawati, 2023) focused more on macro-level issues and opportunities for MSMEs, while studies on *hajj*



digitalization (Ferreira et al., 2019; Owie & Salamah, 2023; Sikumbang et al., 2022) emphasized service delivery aspects. Other studies addressing Shariah principles in digital transactions (Kasmawati et al., 2022; Setiana & Kurniawan, 2023) examined *fiqh* aspects without linking them to *hajj* fund management. Thus, the novelty of this research lies in integrating digitalization, Shariah principles, and e-commerce models into a comprehensive framework for *hajj* fund governance that unites financial, service, and cross-border investment dimensions.

Historically, the digitalization of *hajj* funds marks a transition from manual bureaucratic systems toward modern governance aligned with global technological developments. The modernization that began during the New Order era is now reinforced with a stronger digital sharia foundation, where digitalization has proven effective in enhancing administrative efficiency, transparency, and accountability. Studies on the transformation of *waqf* management show that digital tools reduce costs and strengthen stakeholder interactions (Hatimah et al., 2024; Supriatna et al., 2024), while the implementation of electronic financial systems in Jordanian public enterprises has improved operational effectiveness (Alomari et al., 2024). Furthermore, strategies for integrating advanced technologies such as cloud computing, big data, AI, and IoT have optimized financial governance and promoted sustainable performance (Huang & Gao, 2024; Ulas, 2019).

Nevertheless, digital transformation requires organizational cultural readiness and adaptation to a new digital ecosystem that is more horizontal and user-centered. This shift demands changes in institutional behavior, cross-disciplinary managerial education, and digital literacy for both administrators and pilgrims (Kuzmina-Merlino, 2024; Michael & Brønn, 2017). Thus, the digitalization of *hajj* funds is not only a response to efficiency and transparency demands but also a structural strategy that combines technological innovation with sharia principles to ensure sustainability, inclusivity, and public trust in *hajj* fund governance.

Socially, digital transformation in *hajj* fund management has enhanced pilgrims' accessibility, expanded financial inclusion, and created business opportunities for SMEs. The concept of digital financial inclusion (DFI) emphasizes that digital technology can reach previously unserved populations, thereby fostering economic growth, poverty alleviation, and the achievement of Sustainable Development Goals (SDGs) (Chitimira & Warikandwa, 2023; Chu, 2018; P. Jain et al., 2021). Global studies show that digital financial services support investment in education, healthcare, and small businesses while also improving financial freedom by providing more flexible financing alternatives (Demirgüç-Kunt et al., 2020; Saraf & Kayal, 2022). In the context of *hajj*, this strengthens the potential of sharia financial literacy and inclusion, which remain low in Indonesia, through the use of digital payment platforms, e-wallets, and Islamic banking applications.

However, the implementation of DFI also raises serious challenges. One of them is the digital divide between technologically literate groups and those with limited digital and financial literacy, which risks widening social inequality (Angeles, 2022; Miroshnichenko, 2025). Unequal infrastructure, data security issues, and public trust in digital services also hinder adoption (Bamiro et al., 2024; Mhlanga & Hofisi, 2023). India's experience with the *Pradhan Mantri Jan Dhan Yojana* (PMJDY) program demonstrates that improving digital literacy and developing integrated digital payment systems can narrow gaps in financial access (Jogish et al., 2025). Similarly, digital payment strategies in Sri Lanka and Malaysia show positive prospects for strengthening digital-based financial inclusion (Rathnayake & Kasturiratne, 2024). Thus, the digital transformation of *hajj* fund management provides significant opportunities, but its success depends on literacy, infrastructure, regulatory readiness, and efforts to maintain public trust in sharia-compliant digital financial services.

Ideologically, the digitalization of *hajj* funds illustrates efforts to reconcile modernity with sharia principles, affirming that Islam is compatible with technological innovation while upholding the ethical values of *muamalah*. Studies on Islamic digital ethics highlight that privacy and data protection, essential components of sharia law, are now integrated into data protection regulations in Indonesia, thereby strengthening ethical governance in digital spaces (Hamsin et al., 2023; Putra et al., 2024). The concept of Islamic digital citizenship also provides a framework for digital responsibility and literacy rooted in Islamic values, ensuring ethical and constructive use of digital media (Ashaari et al., 2022). Moreover, Islamic cyber-ethics emphasize the harmony of reason and revelation and the legitimacy of justice systems, differing from secular cyber-ethics that rely primarily on positive legal norms (Ayatollahy, 2020).

On the other hand, ideological challenges arise when technologies such as artificial intelligence (AI) and social media generate risks of algorithmic bias, digital narcissism, and performative religiosity. These dynamics require new frameworks, such as *Digital Fiqh Governance*, to address contemporary ethical challenges (Gorian & Osman, 2024; Siregar et al., 2025). In the realm of business and e-commerce, Islamic business ethics, which emphasize justice, accountability, and human dignity, are increasingly relevant to ensuring that digital transactions align with *maqāṣid al-shari'ah*—namely, the protection and preservation of wealth in (Bani Ahmad et al., 2023; Razzaq et al., 2023). Thus, digitalization is not only a technical instrument of modernization but also an ideological project that demonstrates Islam's ability to navigate modernity while maintaining sharia ethical values.

The primary functions of digitalizing *hajj* fund management include improving efficiency, enhancing transparency, and expanding service accessibility. Systems such as *SISKOHAT* and *SI-MASHAJI* reduce data duplication, strengthen accountability, and reinforce public trust. However, dysfunctions also exist, such as digital data security risks, excessive commercialization that may erode the spiritual dimension of pilgrimage, and low sharia financial literacy that makes some pilgrims vulnerable to misuse. Current findings reveal that Islamic financial institutions increasingly dependent on digital infrastructures face serious threats, such as cyberattacks and the rise of deepfakes that undermine customer trust (K. Jain & Gochhait, 2024; Kismawadi, 2024). Moreover, fintech innovations may introduce elements of *gharar*, particularly in the use of cryptocurrencies and smart contracts, requiring additional regulation to ensure compliance with sharia principles (Alsaghir, 2023). The integration of frontier technologies such as blockchain, AI, and IoT must also proceed cautiously, as while they enhance transparency and efficiency, they carry strategic risks for Islamic financial governance (Mohamed & Ali, 2022).

Furthermore, regulatory and compliance risks remain major challenges. Failure to maintain sharia compliance in digital financial products may cause significant reputational risks for Islamic financial institutions (Asyiqin, 2025). In Indonesia, the use of sharia digital wallets has raised concerns about data privacy and cybercrime, highlighting the urgent need for strict regulation and institutional collaboration to protect pilgrims' personal data (Hamsin et al., 2023). The broader shift toward digital financial ecosystems also requires appropriate transformation strategies to prevent financial exclusion or the erosion of competitiveness among sharia institutions (Shehadeh et al., 2024). Thus, these dysfunctions underscore that technology does not automatically guarantee justice; rather, it requires strong regulation, education, and risk management frameworks to ensure that digitalization truly upholds justice and *maslahah* in Islamic finance.

Based on these findings and reflections, several policy measures should be prioritized. First, digital security standards must be strengthened to protect pilgrims' data and financial transactions. Second, sharia financial literacy and inclusion should be improved through app-based educational campaigns so that pilgrims understand their rights and responsibilities in digital transactions. Third, regulatory

frameworks should be further developed to govern sharia e-commerce in *hajj* fund management, including digital sharia auditing mechanisms. Fourth, technology integration should not neglect the spiritual dimension of pilgrimage, requiring the design of digital *manasik* guidance content that is humanistic, interactive, and worship-centered. With these steps, BPKH can ensure that digitalization not only improves managerial performance but also safeguards the sacred essence of the *hajj*.

## CONCLUSION

This study confirms that digitalization in *hajj* fund management through Shariah-based Consumer-to-Consumer (C2C) models holds significant potential to improve the efficiency, transparency, and accountability of *hajj-umrah* services in Indonesia. The main findings show that the integration of digital technologies such as *Nusuk*, Big Data, and AI, along with domestic applications such as *SISKOHAT* and *SI-MASHAJI*, can strengthen *hajj* fund governance while expanding accessibility for pilgrims. Furthermore, cross-institutional and cross-national collaboration is essential to ensure the success of this transformation, supported by both regulatory frameworks and the legitimacy of DSN-MUI fatwas.

The scientific contribution of this research lies in its comprehensive approach that integrates perspectives on *hajj* fund governance, digital technology innovation, and Shariah principles into a single analytical framework. In doing so, the study broadens the understanding of how digitalization not only supports operational aspects but also serves as a structural transformation strategy within the *hajj-umrah* ecosystem. These findings provide a theoretical contribution to the study of digital Islamic finance and a practical contribution in the form of recommendations for BPKH and relevant stakeholders to strengthen competitiveness, financial inclusion, and Shariah compliance in the era of digital globalization.

Nevertheless, this research has limitations, as it relies solely on literature review as the primary data source and therefore cannot fully capture the empirical dynamics in the field. Future research is recommended to involve field studies, in-depth interviews with stakeholders, and quantitative data analysis to provide a more comprehensive picture of the effectiveness of digitalizing *hajj* fund management. Such steps are expected to enrich the literature further and support more targeted policymaking.

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