

## Waqf Fintech Innovation: Opportunities, Challenges, and Increasing Community Waqf Literacy

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### ABSTRACT

This study aims to identify the role of fintech innovation in improving public literacy on endowments (wakaf) in Indonesia, as well as the opportunities and challenges in its implementation. Although the potential of endowments in Indonesia is vast, public understanding of its concepts and benefits remains limited. The research gap shows that the traditional and opaque management of endowments requires innovation to optimize it. Fintech innovation can bridge this gap by offering digital platforms that ease access and enhance transparency in endowment management. The research method used is a qualitative approach with a literature review, collecting data from relevant written sources, such as books, articles, and journals. Data analysis follows the Miles and Huberman interactive model, involving data reduction, presentation, and conclusion drawing. The results show that fintech for endowments has significant potential to improve public literacy through digital platforms that provide comprehensive and easily accessible information. However, this innovation also faces challenges such as unclear regulations, low digital literacy, and security threats. Therefore, collaboration among the government, endowment institutions, and fintech providers is necessary to develop clear regulations, improve digital literacy, and ensure transaction security. With these steps, fintech for endowments can effectively optimize the potential of endowments as an Islamic philanthropy instrument.

## 1. Introduction

In the modern financial landscape, the integration of technology into Islamic philanthropic practices has opened up a new dimension for the development of waqf, a concept rooted in eternal donations to social and religious purposes (Siska, 2022). Waqf, as an instrument of *maliyah* that has a sacred dimension in sharia, continues to evolve in its understanding and implementation, adjusting to the reality and needs of the people in various regions (Isfandiar, 2008). Ideally, waqf plays a central role in the equitable distribution of welfare and socio-economic development of the people, but the reality shows that its potential has not been utilized optimally (Triwibowo,

2020). Waqf literacy among the public in general is still far behind compared to other Islamic financial instruments such as zakat. This is exacerbated by the lack of innovation in waqf management, which is often still traditional and lacks transparency (Hidayat et.al, 2022). This gap between the huge potential of waqf and its limited realization indicates a significant gap, which prompts the need for in-depth research on waqf fintech innovations as a potential solution to improve literacy and effectiveness of waqf management.

Innovation *Financial Technology (Fintech)* offers transformative solutions to improve efficiency, transparency, and accessibility in waqf management, while potentially increasing waqf literacy among the wider community (Zakariyah et al., 2022). Presence *Fintech* In waqf, it is not only the digitization of conventional processes, but also opens up opportunities to develop new waqf models that are more innovative and inclusive. Through digital platforms, information about waqf can be disseminated more effectively, reach a wider audience, and provide convenience for the public to participate in waqf. This can increase public awareness of the importance of waqf as an instrument of Islamic philanthropy that has a long-term impact on the welfare of the people. Presence of banking applications *Mobile* allows individuals to access Islamic banking services without having to be physically present at a branch office, thus overcoming geographical and time barriers (Hera Susanti, 2024). Digital transformation opens up opportunities for financial services innovation, but also increases security risks *Cyber* (Hera Susanti, 2024). This makes it easier for people to do waqf online, anytime and anywhere, thereby increasing participation in waqf (Rukmana et al., 2023). The integration of technology into waqf management also allows for more transparent and accountable management of waqf funds.

This research aims to analyze the potential and challenges of *waqf fintech* innovation in improving community waqf literacy. This research offers a new perspective by exploring how *fintech* innovations can address traditional challenges in waqf management and improve public understanding of waqf.

## 2. Method

This study uses a qualitative approach with the type of library *research* to collect relevant data and information. Secondary data is the main focus of this literature study, which is obtained from various written sources such as books, scientific journals, articles, research reports, and other official documents related to the topic of *waqf fintech innovation* and community waqf literacy. Literature studies are conducted systematically and comprehensively by considering the actuality and accuracy of the data, as well as their relevance to the research focus.

Data analysis was carried out using the Miles and Huberman interactive model, which involves three main stages: data reduction, data presentation, and conclusion drawn. Data reduction is the process of selecting, focusing, simplifying, and transforming raw data obtained from literature studies. The presentation of data is carried out in the form of a descriptive narrative to provide a clear and systematic picture of *waqf fintech* innovations and community waqf literacy.

### 3. Main Heading of the Analysis or Results

The results of the study show that innovation *Fintech* Waqf has significant potential in increasing people's waqf literacy. Platform *Fintech* can provide comprehensive and easily accessible information about waqf, including types of waqf, the benefits of waqf, and how to do waqf. Innovation *Fintech* Waqf also opens up opportunities for the development of new waqf models that are more innovative and inclusive, such as micro waqf (*micro-waqf*) and project-based waqf. Micro waqf allows individuals with limited funds to participate in waqf, while project-based waqf allows people to waqf directly for specific social and religious projects (Alam et al., 2021).

However, *waqf fintech* innovation also faces various challenges, including unclear regulations, cybersecurity, and low digital literacy among the public. Unclear regulations can hinder the development and implementation of *waqf fintech*, while cybersecurity risks can threaten the security of waqf funds and public trust.

In addition, low digital literacy among the public, especially in rural areas, can be an obstacle to the adoption of *waqf fintech*. The study's findings correlate with previous research that highlighted the importance of digital financial literacy in driving *fintech* adoption. To overcome these challenges, collaborative efforts are needed from various parties, including the government, waqf institutions, *fintech providers*, and the community.

The government needs to issue clear regulations and support *waqf fintech* innovations, while waqf institutions need to improve governance and transparency in waqf management. *Fintech providers* need to develop a platform that is secure, easy to use, and in accordance with the needs of the community.

#### A. Waqf Fintech Innovation in Indonesia

Indonesia as a country with the largest Muslim population in the world has a huge waqf potential but has not been optimally optimized. The potential of waqf in Indonesia is estimated to reach around Rp. 2,000 trillion with a land area of around 420 thousand hectares, but the realization of the collection is

still far from optimal. Historically, waqf has played an important role in the development of the Muslim community in Indonesia, starting from the early days of Islamic civilization to the formation of modern regulations through Law No. 41 of 2004 and the establishment of the Indonesian Waqf Board (BWI) which marked a new era by emphasizing the productivity of waqf assets and the professionalization of nazhir (Azizi & Ivantri, 2021).

The increasingly developing digital era has opened up new opportunities in optimizing waqf management through digital transformation. Financial Technology (Fintech) as a technological innovation that provides ease of financial services can reach a wider community and improve the efficiency of waqf management. Sharia fintech is a financial technology application that is in accordance with sharia principles, including the prohibition of *riba*, *gharar*, and *maysir*, as well as ensuring fairness and compliance with Islamic law in every financial transaction. The integration of fintech in the management of waqf can bring a variety of benefits, including increased transparency, accountability, and efficiency through technologies such as blockchain that ensure every transaction is clearly recorded and cannot be manipulated (Fikri et al., 2025).

Waqf fintech innovations can be realized in various forms that have begun to be developed in Indonesia. First, digital waqf crowdfunding is a platform that facilitates the collection of waqf funds from the wider community by providing easy access without having to visit the management institution physically. Second, waqf blockchain technology that increases transparency, accountability, and security in the management of waqf assets through records that cannot be manipulated. Third, an online waqf system based on applications and websites that allow people to waqf anytime and anywhere. Fourth, the use of data analytics to identify community needs and allocate waqf assets in a targeted manner. Fifth, digital productive waqf that uses technology to manage and develop waqf assets to be more productive in various economic sectors (Harrieti & Suwandono, 2024).

The definition of Financial Technology has two viewing points of view where the perspective is from the conventional side and the sharia side, the first point of view is Financial Technology is the hybridization of technology in the traditional financial service process with technology-based. Then this segment is a dynamic segment between the financial services and technology sectors where start-ups that focus on technology and are new market views innovate products and services that are currently provided by the traditional financial services industry. In the second view, the definition of sharia fintech is a combination of innovations in the field of finance and technology by facilitating the transaction and investment process based on sharia values. The existence of this concept is a new breakthrough that is experiencing rapid

development at this time which is widely used both in terms of guarantee payment services and so on. Therefore, Islam is a comprehensive religion so that in the field of finance it also has policies in accordance with the principles of Islamic sharia(Adolph, 2016).

The implementation of financial technology in Indonesia, according to Maulidah Narastri, is regulated in Bank Indonesia Regulation No. 19/12/PBI/2017 concerning the implementation of financial technology, the existence of this policy is due to the development of technology and information systems that continue to give birth to various innovations. With the development of financial technology, it can meet various needs and can bring benefits to society. Then it will always be monitored and developed to support the creation of monetary stability, financial system stability, and an efficient, smooth, and reliable payment system. Therefore, a good response is given by Bank Indonesia to technological advances so that it is synchronized, harmonious, and always integrated with the prevailing policies. In addition, the Regulation of the Financial Services Authority of the Republic of Indonesia Number 13/POJK.02/2018 Concerning Digital Financial Innovation in the Financial Services Sector explains that the development of financial innovation technology cannot be ignored but is managed properly in order to provide the greatest benefits for the benefit of the community. Likewise, according to the ulema council in the Fatwa of the Indonesian Ulema Council Standards Number 117/DSN-MUI/II/2018 concerning Information Technology-Based Financing Services Based on Sharia Principles, there are three parameters of economic products that can be categorized in accordance with sharia, namely: first, free from prohibited transactions; second, the product is in accordance with the sharia contract or transaction; and third, it is obligatory to maintain Islamic manners (morals) in muamalah. Therefore, in addition to transactions in the Islamic business, waqf is also in accordance with the applicable provisions(Nuroini et al., 2024).

Optimizing the potential of waqf fintech requires the active role of various stakeholders with clear responsibilities. The government plays a role in drafting regulations that are accommodating and providing supporting infrastructure, waqf institutions and nazhir are responsible for increasing institutional capacity and management professionalism, academics and researchers develop innovation models that are appropriate to the local context, the private sector participates in product development and productive waqf investment, while the community needs to increase literacy and active participation in the digital waqf ecosystem. This synergistic collaboration between stakeholders will strengthen the digital waqf innovation ecosystem and increase its impact in supporting inclusive and sustainable economic development.

The use of waqf funds through fintech innovation can make a significant contribution to sustainable development through various strategic programs. These programs include community economic development through productive management of waqf assets, provision of public facilities such as education and health infrastructure, poverty alleviation programs through social assistance and community empowerment, and environmental conservation activities to support sustainable development. The implementation of these programs with the support of fintech technology can increase the effectiveness of distribution and the resulting socio-economic impact, so that waqf can play an optimal role as an instrument of national development(Wahyuni et al., 2022).

Waqf fintech innovation in Indonesia has great potential to revolutionize waqf management and build a more resilient and reliable financial ecosystem. The integration of technology in waqf management not only increases transparency and efficiency, but also strengthens public trust in the Islamic financial system and supports the achievement of sustainable development goals. To realize this potential optimally, strong commitment and collaboration from all stakeholders are needed in developing a waqf fintech ecosystem that is in accordance with sharia principles and can provide maximum benefits for the economic progress and welfare of the Indonesian people.

The existence of Islamic financial technology in Indonesia was created because the majority of the population of Indonesia is a follower of Islam, so halal-based services are in great demand by the entire community. Thus, business actors are certainly very aggressive in obtaining halal labels to be able to compete in the marketing of products created through technology(Vika Mariska, 2024). Then this also has an impact on the products offered in financial technology, businesses in this field using Islamic principles called sharia financial technology. In addition, the contracts used are in accordance with the conditions and pillars set by sharia principles. Therefore, the pillars of sharia business contracts that should be followed by sharia financial technology are as follows:

- a) Al-'Aqidan (two parties who have contracted) are the two parties who make the transaction
- b) Al-Ma'qud 'alaih (the object of the contract) is the things that are the consequences of the contract, for example, the goods and their prices in buying and selling.
- c) Shighat al 'aqd (contract editorial) is in the form of words or actions that state ijab and qobul, for example 'I sell' and 'I buy'.

With these provisions, sharia fintech services for financing and waqf fund collection do not cause defective contracts when carrying out their business activities. The following is evidence that shows the principle of helping each other and in sharia fintech there is a principle of helping each other.

وَلَا تَعَاوَنُوا عَلَى الْإِثْمِ وَالْعُدْوَانِ وَاتَّقُوا اللَّهَ إِنَّ اللَّهَ شَدِيدُ الْعِقَابِ

"And help you in virtue and piety, and do not help in committing sins and transgressions. And fear Allah, for Allah is a severe punishment." (QS. Al Maidah: 2)

From this verse, it is stated that it is permissible for him to help each other in goodness. In money waqf through fintech, there is a principle of helping each other. Where there is a wakif that distributes its wealth to be used for people in need so that a people can continue their activities so that their lives are maintained and respected. Making the absence of retained wealth for the poor and Ibn Sabil and the wealth of the wakif useful in this world and in the hereafter.

In sharia fintech there is convenience and this sentence shows the ease in life:

يُرِيدُ اللَّهُ بِكُمُ الْيُسْرَ وَلَا يُرِيدُ بِكُمُ الْعُسْرَ

"Allah wills ease for you, and does not want difficulty for you". (QS. Al-Baqarah:185)

Based on the verse of the Qur'an, it is permissible to implement sharia fintech with ease in the current digital era and the law allows doing so as long as there is no evidence that prohibits it. Because it is a solution to the collection, development and distribution of waqf funds in the modern era.

## B. The Legal Status of Sharia Fintech as a Waqf Media in Indonesia

The use of financial technology as a transaction medium has been recognized since the enactment of Law of the Republic of Indonesia Number 11 of 2008 concerning Information and Electronic Transactions which later changed to Law of the Republic of Indonesia Number 19 of 2016 concerning Information and Electronic Transactions. Based on this policy, it is a digital service that can be organized to get Information and Electronic Transactions. In addition, these services can be realized in accordance with the purpose and function of the law that causes justice, public order, and legal certainty. Furthermore, the medium of implementation is by using computers, computer networks, and/or other electronic media. Therefore, every transaction that uses electronic media in Indonesia is legally recognized both as a transaction

medium and as information from digital service activities(Isabela & Umam, 2020).

There are laws that regulate financial technology and the supervision of Islamic Financial Institutions such as the Financial Services Authority and Bank Indonesia. Then the institution has issued a policy on this matter so that it can be implemented in accordance with the provisions of laws and regulations, among the regulations that regulate it are as follows:

Table: 1.1. Fintech Regulation

Yes	Regulation
1	Bank Indonesia Circular Letter No. 18/22/DKSP on the Implementation of Digital Financial Services
2	Bank Indonesia Regulation No. 18/17/PBI/2016 concerning Electronic Money
3	Bank Indonesia Regulation No. 18/40/FBI/2016 concerning the Implementation of Payment Transaction Processing
4	POJK Number 77/POJK.01/2026 concerning Information Technology-Based Money Lending Services

Based on the above regulations, sharia fintech services can be held as a transaction medium that is carried out in accordance with its provisions. Then with the existence of this policy as one of the protections for its use in accordance with the applicable legal certainty. So that the implementation of the system has been recognized in accordance with the concept and purpose of fintech as a medium that is in line with sharia principles.

Based on the theory of legal certainty for the implementation of sharia fintech as a digital service medium as a solution for waqf development in Indonesia. Therefore, the existence of a policy that regulates sharia services has legal certainty even though it still refers to regulations in general. In addition to the existence of these policies in order to fill the legal void that if problems occur, they can be easily overcome. So that the status of sharia fintech as a digital waqf media can be carried out according to the stipulated conditions and conditions (Susan, 2025).

The cooperation mechanism for the use of digital services provided by the first sharia fintech to be present to support the progress of waqf in Indonesia. Then through bridging the waqif and nazhir through joint funding programs offered to the community. In addition, the media is present as a P2P (Peer-to-Peer) sharia lending company with a non-direct funding system, namely contract actors are required to become partners first. In addition, it is

carried out in accordance with applicable regulations, so that in waqf and its management it is in accordance with good corporate governance.

Waqf through sharia fintech is one of the alternatives to prosper the community and is carried out in accordance with the five basic goals of Islamic law that have been set by Allah since Islam existed in the world. Among the bases and goals put forward by previous scholars are *hifzh al-din* (preserving religion), *hifzh al-nafs* (preserving oneself), *hifzh al-aql* (preserving intellect), *hifzh al-amwal* (preserving wealth), and *hifzh al-nasl* (preserving generations). From the five basic provisions, everyone carries out *muamalah*, especially in the field of waqf in line with Islamic law. So that in the development of waqf, the method of collection, distribution both online and offline is in accordance with the basic concept of the purpose of Islamic law.

Based on the theory of sharia fintech, waqf through the digital system in Indonesia is in line with sharia principles in offering programs to the community and their management. Therefore, the development through this new innovation has legal certainty even though in reality it is different from the potential that has existed so far. So that the legal status of waqf through fintech applications does not conflict with sharia economic law in Indonesia (Sulistiani, 2019).

Likewise, the concept of waqf through sharia fintech in Indonesia is in line with the concept of the state of law which aims for certainty, usefulness and justice for the welfare state which has the same goal, namely for the general welfare. This is mentioned in the Preamble to the 1945 Constitution to advance public welfare based on social justice. Therefore, the state of law aims to realize the general welfare, form a just and prosperous society based on Pancasila. In addition, among the objectives of Islamic law are stated in the fourth clause of the preamble to the 1945 Constitution to advance public welfare. In addition, the legal purpose of Indonesian waqf is for the benefit of worship and general welfare according to sharia and the purpose of Islamic law is for the benefit of humans (*ummah*). Thus, these three legal objectives are interrelated in an effort to achieve the concept of a welfare state (welfare state) (A. Fahmi Zakariya et al., 2021).

Based on the concept of waqf through sharia fintech mentioned above, the legal status of sharia fintech as a medium for collecting waqf funds is allowed because it does not contain elements of usury. With the legal certainty of the implementation, it is a solution to fill the legal void that regulates it technically. The purpose of having a policy that regulates in detail so that it can easily solve the problem. So that problems that are vulnerable to occur in the implementation of digital services can be regulated in accordance with good governance. Waqf using sharia fintech has several goals that initially

from traditional to now continue to develop with the times (Pramono & Wahyuni, 2021). The objectives of this can be seen as follows:

- a) As a complement to the development of waqf in collection, distribution to the general public as well as investment and financing for micro, small and medium enterprises
- b) Assisting in the fundraising of social money waqf through technology that can be on behalf of people who are still alive and who are no longer alive, as proof of the money waqf certificate that strengthens public integration.
- c) It can increase social investment into social capital and help the social capital market in accordance with Islamic law.
- d) Increase awareness of social responsibility for those who are able to contribute to society so that security and peace can be achieved.

Based on the goals mentioned above, the impact of money waqf through sharia fintech, provides convenience, justice and peace for others in society. So that they can help each other through their management which gets results for other religious socials.

The development of waqf through sharia fintech in Indonesia has developed as a solution for the general public in accordance with the times. Then its existence, which is marked by the proliferation of sharia fintech in Indonesia, has become a new breakthrough for waqf institutions in managing it. In addition, financial technology (fintech) is an innovation in financial services with technology that is easily accessible to the public and not easily accommodated by traditional services. Therefore, the benefits obtained from using the service, which is based on sharia fintech, between the financing recipient and the financier do not need to meet face-to-face. So that to meet needs can be easier because the services provided are in accordance with sharia principles.

### **C. Waqf Fintech Innovation Opportunities in Improving Waqf Literacy**

Digital transformation has brought significant changes in various aspects of life, including in the management of Islamic philanthropic instruments such as waqf. In the Indonesian context, waqf has enormous potential to support the economic and social development of the community, but its management still faces various challenges, especially related to low public literacy. According to data from the Indonesian Waqf Agency, the potential of waqf in Indonesia reaches trillions of rupiah per year, but the realization is still far from optimal due to the lack of public understanding of the concept, benefits, and mechanisms of modern waqf (Amaliyah et al., 2022).

Fintech or financial technology has become a catalyst in the revolution of the global financial system, including in the Islamic finance sector. As stated

by Sulistiani, sharia fintech has a strategic role in increasing the efficiency of money waqf fundraising in Indonesia through the use of technology in accordance with sharia principles. The integration of technology in waqf management not only covers operational aspects, but also opens up great opportunities to improve people's waqf literacy through interactive and easily accessible digital platforms. The concept of waqf fintech is in line with the theory of innovation diffusion put forward by Rogers, where the adoption of new technology will be more acceptable if it provides relative benefits, compatibility with existing values, and ease of use (Meli Saputri, 2024).

Waqf literacy is a crucial factor in optimizing the potential of waqf in Indonesia. Islamic financial literacy has a close relationship with people's interest in participating in Islamic investments, including waqf. In the context of waqf, literacy not only includes an understanding of the basic concept of waqf as an instrument of Islamic philanthropy, but also an understanding of various contemporary waqf innovations such as money waqf, productive waqf, and waqf for infrastructure development. Social learning theory explains that the learning process will be more effective when carried out through observation and social interaction, which can be realized through waqf fintech platforms that provide interactive educational features (Hadi Ryandono, 2019).

Waqf fintech innovation opportunities in increasing waqf literacy can be realized through various innovative technological approaches. Waqf fintech platforms can integrate educational features such as virtual webinars, interactive tutorials, waqf simulations, and multimedia content that explains the concept of waqf in an engaging and easy-to-understand way. The innovation strategy in the digital Islamic finance sector must consider the aspect of collaboration between various stakeholders to create a conducive ecosystem. Blockchain technology can provide transparency and accountability in the management of waqf, which in turn will increase public trust and encourage them to learn more about waqf.

The implementation of gamification in the waqf fintech platform is also a great opportunity to increase public engagement in learning about waqf. The motivation theory put forward by Deci and Ryan explains that intrinsic motivation increases when individuals feel competent, autonomous, and socially connected. Waqf fintech platforms can implement a reward system, leaderboard, and achievement badges to encourage people to actively learn about waqf. In addition, the social learning feature that allows users to share their experiences and knowledge about waqf will strengthen the social learning aspect of the platform (Nuradi et al., 2024).

The use of artificial intelligence in the waqf fintech platform also opens up opportunities to personalize educational content according to the profile

and needs of each user. AI-based recommendation systems can present waqf educational content tailored to the level of literacy, demographics, and user preferences. This is in line with adaptive learning theory which emphasizes the importance of adapting learning methods to individual characteristics of learners.

Collaboration between waqf fintech platforms and educational institutions is also a strategic opportunity to systematically improve waqf literacy. As conveyed in the research on catin waqf in West Sumatra, waqf education programs can be integrated in various important moments in people's lives. Waqf fintech platforms can collaborate with universities, schools, and Islamic boarding schools to develop comprehensive digital waqf learning modules. A blended learning approach that combines online and offline learning will provide flexibility while ensuring the quality of waqf education provided (Rohim, 2021).

Another opportunity for waqf fintech is to create an integrated waqf ecosystem where various stakeholders can collaborate to increase waqf literacy. The platform can provide a space for waqf nazhir to share best practices, academics to publish research on waqf, and practitioners to share case studies on the implementation of productive waqf. Crowdsourcing knowledge through the waqf fintech platform will enrich educational content and ensure that the information conveyed is always up-to-date and relevant to the latest developments in the world of waqf.

The positive impact of the use of sharia financial technology services using digital financial inclusion in the implementation of all efforts aimed at eliminating all obstacles to access to the public to do waqf (Rasad Musfik R et al., 2023). Then it is carried out by utilizing sharia fintech services in accordance with five important principles inherent in successful businesses for financial inclusion, namely:

- a) Low profit margins are a key characteristic of Islamic fintech.
- b) Small assets, thus small assets, certainly generate relatively low marginal costs so that they can strengthen the first principle.
- c) The scalability of each service can be done from a small thing but must be scaled up in order to get the full benefits and the network to expand.
- d) Innovative is thus carried out in the product and its operations so that the wider the internet network for the service user, the more innovation will be generated.
- e) Convenience, therefore, is the main advantage of the capital required is less and can encourage innovation.

Based on the five principles mentioned above, it shows that sharia fintech has provided maximum services for the development of money waqf through sharia fintech so that what exists at this time can synergize with each other in waqf and services as well as the management of waqf funds.

High Islamic financial literacy allows individuals to understand the benefits and mechanisms of Islamic fintech products, thereby increasing their confidence in using these services. A more comprehensive and affordable education program is needed to increase Islamic financial literacy among the wider community, which will ultimately encourage the adoption of waqf fintech technology. A deep understanding of sharia fintech is the main key in encouraging interest and behavior in using this platform in the management of zakat and waqf. Clear and transparent information about how sharia fintech works and its benefits needs to be disseminated through various media, including seminars, workshops, and digital campaigns. This will help the community understand how technology can simplify the waqf process and increase the effectiveness of waqf fund management (Mubarok & Wiwin, 2023).

Transparency and accountability are one of the main reasons for the high interest in Islamic fintech. The blockchain technology applied can ensure that every transaction is clearly recorded and cannot be manipulated. Islamic fintech platforms must continue to prioritize the principles of transparency and accountability to maintain user trust, so that people feel safe and confident in using this service. The ease of access and efficiency offered by the sharia fintech platform allows Muslims to pay zakat and contribute to waqf easily, anytime and anywhere. This ease of access can increase public participation in Islamic philanthropy, so that more funds can be collected and used for the benefit of the people. Digital technology enables faster, more efficient, and accessible processes to all levels of society (Fitriani & Taufiq, 2023).

Although it has great potential in the management of zakat and waqf, challenges such as strict regulations and protection of user rights must be overcome. Clear and comprehensive regulations are needed to ensure that all sharia fintech services and products are compliant with sharia principles. In addition, education and literacy of Islamic finance must also be improved so that people can make optimal use of this technology. The integration of sharia fintech in the management of zakat and waqf can bring significant benefits in increasing efficiency, transparency, and accountability. With good Islamic financial literacy and a deep understanding of Islamic fintech, people can be more confident to use this technology in supporting Islamic philanthropy. Collaborative efforts are needed between the government, Islamic financial institutions, and the community to develop and utilize Islamic fintech

optimally in the management of waqf that is more effective and has a wide impact(Leviansyah, 2022).

#### **D. The Challenge of Waqf Fintech Innovation in Improving Waqf Literacy**

The digitalization of money waqf in Indonesia faces complex challenges in increasing people's waqf literacy, even though it has enormous potential to support the social and economic development of the people. The potential of money waqf in Indonesia is estimated to reach IDR 180 trillion per year according to the Indonesian Waqf Agency (BWI), but the realization is still far from optimal. The main challenge faced is the low digital financial literacy of the Indonesian people, which only reaches 49.68 percent based on the 2022 National Survey on Financial Literacy and Inclusion (SNLIK) from the OJK, even though the level of financial inclusion has reached 85.10 percent, creating a significant gap between accessibility and understanding. Waqf literacy is still low as a fundamental obstacle, in contrast to zakat which has been known since the basic education level, waqf has only begun to be introduced as a strategic instrument in recent years, so it requires more massive and structured educational efforts(Rini et al., 2023).

Waqf fintech innovations have presented various digital platforms such as LinkAja Syariah, e-Salaam, and GoAmal Dompot Dhuafa which offer ease of access and transparency in the management of money waqf. These platforms utilize QRIS technology, mobile banking, and sharia crowdfunding systems to make it easier for people to make waqf without geographical and time restrictions. Data shows that the implementation of digital technology in waqf management can increase the number of transactions by up to three times, as experienced by Dompot Dhuafa from 2,400 transactions in October 2018 to 8,600 transactions in October 2019 after adopting digital platforms. The millennial generation is the main target in this digitalization strategy, considering that they are more familiar with technology and tend to make small donations but with high frequency(Soehardi, 2023).

Blockchain technology is emerging as a leading innovation in waqf fintech because it offers high transparency, security, and accountability through distributed ledger systems and smart contracts. Fintech companies such as Singapore's Finterra have developed blockchain-based crowdfunding platforms for waqf projects, providing high credibility as recorded data cannot be manipulated once verified. However, the application of blockchain technology faces significant challenges in the form of a lack of understanding of technology among the community and waqf management institutions, as well as high implementation costs to build adequate blockchain-based infrastructure. The implementation of waqf fintech in Indonesia faces several significant challenges that need to be overcome systematically. Key challenges include low digital literacy and sharia finance among the public, issues of trust

in digital platforms, and the need for clear regulations to accommodate technological developments while maintaining sharia compliance. In addition, institutional capacity and qualified human resources are needed to manage the waqf digital platform effectively. To overcome these challenges, a comprehensive financial education program and collaborative efforts are needed between the government, financial institutions, and educational institutions in developing fintech solutions that are in accordance with sharia principles (Pramono et al., 2019).

Regulation is a crucial challenge in the development of waqf fintech, considering the lack of a comprehensive legal framework to regulate the digitization of money waqf, including aspects of cybersecurity, sharia transaction standards, and digital audits. This regulatory vacuum creates legal uncertainty for platform managers and reduces public trust to participate in digital waqf, even though clear and adaptive regulations are needed to ensure compliance with sharia principles in any financial technology innovation. Cybersecurity challenges are also a serious concern, considering that the financial services sector, including fintech, receives an average of 1,131 cyberattacks every week based on Checkpoint Research 2022 data (Hasanah & Hayati, 2020).

The long-term strategy to address the challenges of waqf fintech includes the development of a phased implementation roadmap ranging from digital literacy campaigns, the integration of QRIS as a universal payment method, to the development of a blockchain-based national super-platform. Intensive education and technology training for the community and waqf management institutions are the main keys to increasing digital literacy, while the development of regulations that support and protect the Islamic fintech industry needs to be prioritized by the government. The basic principles of digital waqf management must be based on trust, transparency, efficiency, and inclusivity to ensure that technological innovation is in line with the sharia maqashid and can provide optimal benefits for the socio-economic development of Muslims in Indonesia.

The implementation of waqf fintech in the digital era faces complex challenges in an effort to increase waqf literacy in the community. The low level of literacy is one of the main obstacles to the development of sharia fintech in Indonesia, including waqf fintech platforms. Although the potential of waqf fintech in the management of zakat and waqf is very large, there are several issues of public trust in digital platforms that require clear regulation and policies related to digital waqf innovation, as well as the main challenge faced is the low institutional capacity and human resources who are able to manage the digital waqf platform effectively. In developing waqf digitalization, not only are we needed for strong tools, but also for institutions

that are professional and conceptual and supported by the availability of human resources who are experts in the field of waqf. The sharia fintech industry needs human resources who understand Islamic principles and laws and are proficient in technology. The limitation of experts who have dual competence has an impact on product quality and sharia compliance in the management of digital waqf (Imam Teguh Saptono (BWI) & Ministry of National Development Planning/Bappenas/KNKS, 2019).

Furthermore, the challenge of developing digital waqf products and services that can reach all levels of society, especially the middle class who are in remote or less affordable areas. Based on OJK data, as many as 54 million Indonesians are still unreached by conventional financial services. This shows that there is still a significant digital gap in access to technology-based financial services, including digital waqf platforms. The next challenge is related to the low digital financial literacy of the Indonesian people. Based on the results of the 2022 National Survey on Financial Literacy and Inclusion (SNLIK) from the Financial Services Authority (OJK), the financial inclusion index in Indonesia has indeed reached 85.10 percent. However, the financial literacy index is still 49.68 percent. This gap between financial inclusion and literacy is a serious challenge, as people are already using digital services but have not fully understood the mechanisms and risks.

Ignorance of terms such as *mudharabah*, *musharakah*, or *ujrah* is the main factor that makes people confused about distinguishing between sharia and conventional services. In the context of digital waqf, the limited understanding of the concept of waqf itself, coupled with the complexity of digital technology, creates a double barrier to the adoption of waqf fintech platforms. The younger generation and MSME actors are the group that feels this challenge the most, because they tend to be unfamiliar with the concepts in sharia fintech. The challenge faced is how to create sharia fintech that is easy and safe to use, more efficient, and on target in overcoming the problems faced by the people today. In the context of digital waqf, this means that platforms must be able to simplify the waqf process while maintaining the necessary transparency and accountability (Sukanto, 2018).

Strategies to overcome these challenges require cross-sector collaboration. Digital-based Islamic finance education campaigns must be carried out by the government and companies through seminars, collaborations with campuses, and social media. The educational approach must be delivered in a simple, easily accessible, and appropriate manner in the context of society, using various creative channels such as social media, community training, and integration in the educational curriculum.

## E. SWOT Analysis of Waqf Fintech Innovation

The main strength of waqf fintech innovation in Indonesia lies in its huge market potential with the Muslim population reaching around 87% of the 270 million population, providing a broad demographic base for the development of digital waqf platforms. The rapidly growing digital infrastructure with internet penetration reaching 212 million active users and a financial inclusion rate of 85.10% has created a strong foundation for the implementation of Islamic financial technology. The blockchain technology applied in waqf fintech offers high transparency, security, and accountability through a distributed ledger system that ensures every transaction is clearly recorded and cannot be manipulated, increasing public trust. Waqf fintech platforms also provide easy access without geographical and time restrictions, with data showing that the implementation of digital technology can increase the number of transactions by up to threefold. The increasingly strong regulatory support through Law No. 41 of 2004 on Waqf and various regulations of the OJK and Bank Indonesia provides an adequate legal basis for the development of waqf fintech.

Significant weaknesses faced include the low digital literacy and sharia finance of the community, where even though the financial inclusion rate reaches 85.10%, the financial literacy index is still low at 49.68%. Ignorance of terms such as *mudharabah*, *musharakah*, or *ujrah* is the main factor that makes people confused about distinguishing between sharia and conventional services. The sharia fintech industry needs human resources who understand Islamic principles and laws and are proficient in technology, but the limitations of experts with dual competence have an impact on product quality and sharia compliance. The lack of integration between BWI and other waqf institutions has hampered BWI to achieve its goals, while the dualism between BWI and the Directorate of Waqf of the Ministry of Religious Affairs has become an ongoing internal challenge. Limited institutional capacity and low public understanding of the concept of modern waqf are also structural weaknesses that need to be overcome (Dina et al., 2025).

Identification of internal weaknesses reveals significant structural challenges in the development of waqf literacy through fintech. The fundamental weakness lies in the very wide gap between digital literacy and Islamic finance, where even though the financial inclusion rate reaches 85.10%, the financial literacy index is only 49.68%. Ignorance of terms such as *mudharabah*, *musharakah*, or *ujrah* is the main factor that makes people confused about distinguishing between sharia and conventional services. This gap creates a paradox where people have been using digital services but have not fully understood the mechanisms, risks, and underlying sharia principles (Nasution, 2022).

Human resource weakness is a critical bottleneck, where the sharia fintech industry needs experts who have dual competence in technology and Islamic legal principles. These limitations have a direct impact on product quality and the level of sharia compliance in digital waqf management. The lack of integration between BWI and other waqf institutions has hindered the achievement of optimal goals, while institutional dualism between BWI and the Directorate of Waqf of the Ministry of Religious Affairs creates coordination inefficiencies. The limited institutional capacity in managing digital platforms professionally and the public's understanding of the concept of modern waqf is still low compared to the zakat that has been known since basic education, requires more massive and structured educational efforts.

Great opportunities arise from the digital transformation of the global financial sector which opens up space for optimizing waqf management through financial technology to reach a wider community. The millennial segment is a strategic target because they are more familiar with technology and tend to make donations in small nominal amounts with high frequency. Blockchain technology and artificial intelligence innovations open up opportunities for personalization of educational content and 24/7 waqf consulting services through chatbots. Some of the development opportunities include the creation of waqf applications, the adoption of fintech crowdfunding, the exploration of waqf blockchain, the implementation of WaqfCoin, and the establishment of an online platform for public reporting of waqf fund activities. Collaboration with educational institutions to develop comprehensive digital waqf learning modules and government support through BWI and KNEKS in the digital transformation of waqf is a very potential strategic opportunity(Nawawi et al., 2024).

External opportunity analysis shows a very favorable digital transformation momentum for the development of waqf fintech. The trend of digitalization of the global financial sector has created an ecosystem conducive to Islamic financial technology innovation, with Financial Technology as a catalyst that can reach a wider community and improve the efficiency of waqf management. The tech-savvy segment of the millennial generation is a strategic target because of their characteristics of being more familiar with digital technology and having a pattern of donations in small nominals with high frequency, creating long-term sustainability opportunities.

Artificial intelligence and blockchain technology innovations open up opportunities for personalization of educational content tailored to the individual profiles and needs of users. AI-based recommendation systems can provide targeted waqf educational content, while chatbots with natural language processing provide 24/7 consulting services. Development opportunities include the creation of waqf applications, the adoption of fintech

crowdfunding, the exploration of waqf blockchain, the implementation of WaqfCoin, and the establishment of an online platform for public reporting of waqf fund activities. Strategic collaboration with educational institutions to develop comprehensive digital waqf learning modules and government support through BWI in collaboration with Bank Indonesia for a centralized waqf database and KNEKS' commitment to digital waqf transformation to create a supportive ecosystem(Fattah1, 2022).

The main threats faced include high cybersecurity challenges, with the financial services sector including fintech getting an average of 1,131 cyberattacks every week. The uncertainty of waqf digital regulations due to the lack of a comprehensive legal framework creates uncertainty for platform managers and reduces public trust. Intense competition from conventional fintechs and financial institutions that are starting to enter digital services is becoming a serious competitive threat. The biggest threats occurred in the capacity of waqf managers (nazhir), the lack of awareness and knowledge of the Indonesian Muslim community about waqf, as well as the controversy surrounding money waqf which is still a debate. The digital divide between regions with 54 million people who have not yet been reached by conventional financial services, rapid technological change, and economic volatility are also external threats that need to be anticipated(Maulida et al., 2020).

External threat evaluation identifies systemic risks that can hinder the development of waqf fintech. Cybersecurity threats are a top priority with the financial services sector, including fintech, facing an average of 1,131 cyberattacks every week, based on Checkpoint Research 2022 data. The complexity of cyber threats increases with the sophistication of technology, requiring continuous investment in robust security systems. The uncertainty of digital waqf regulation due to the lack of a comprehensive legal framework governing the digitization of money waqf, including aspects of cybersecurity, sharia transaction standards, and digital audits, creates significant legal and operational risks(Azizi & Ivantri, 2021).

Intense competition from conventional fintechs and traditional financial institutions that are starting to enter digital services with greater resources and more mature experience is becoming a serious competitive threat. The fundamental threat lies in the limited capacity of waqf managers (nazhir), the lack of awareness and knowledge of the Indonesian Muslim community about the potential of waqf, and the controversy surrounding money waqf which is still a debate among scholars. The digital divide between regions with 54 million people who have not been reached by conventional financial services shows the infrastructure challenges that need to be addressed. Global economic volatility and rapid technological change can make today's

innovations obsolete in a short period of time, requiring adaptability and sustainable R&D investment(Adolph, 2016).

The most effective development strategy is to optimize internal strengths to make the most of external opportunities, while gradually addressing weaknesses through the utilization of available opportunities. This includes the development of an innovative blockchain-based waqf platform, a comprehensive Islamic finance education program, the development of strategic partnerships with educational institutions, and the creation of a multi-layered security system. Multi-stakeholder collaboration between the government, Islamic financial institutions, educational institutions, and the community is the main key to success, with a special focus on increasing digital waqf literacy as the foundation for the development of a sustainable waqf fintech ecosystem. With the right strategic approach and the commitment of all parties, waqf fintech can be an effective instrument not only to increase waqf literacy but also to optimize the potential of waqf as a source of financing for the socio-economic development of Muslims in Indonesia(Wahyuni et al., 2022).

Based on a comprehensive SWOT analysis, the development of waqf fintech to increase waqf literacy requires a strategic approach that optimizes internal strengths to maximize external opportunities (SO strategy), while systematically addressing weaknesses through the utilization of available opportunities (WO strategy). The SO strategy includes utilizing demographic potential and digital infrastructure to develop innovative blockchain-based waqf platforms, optimizing collaboration with educational institutions for massive digital waqf literacy programs, and developing AI features for personalization of waqf education according to user characteristics.

WO's strategy focuses on developing comprehensive Islamic finance education programs by utilizing digital technology, building strategic partnerships with educational institutions to increase human resource capacity, and creating a digital waqf learning platform that is easily accessible and understood. To anticipate threats, ST's strategy uses robust blockchain technology to address cybersecurity threats, leverages a large user base to create digital waqf industry standards, and develops multi-layered security systems. The WT strategy involves the development of comprehensive regulations to address legal uncertainty, the construction of massive digital literacy programs, and the creation of partnerships with governments for equitable digital infrastructure(Vika Mariska, 2024).

The implementation of this strategy requires synergistic multi-stakeholder collaboration between the government, Islamic financial institutions, educational institutions, and the community, with a special focus on increasing digital waqf literacy as the foundation for the development of a

sustainable waqf fintech ecosystem. With the right strategic approach and the commitment of all parties, waqf fintech can be an effective instrument not only to increase waqf literacy but also to optimize the potential of waqf as a source of financing for the socio-economic development of Muslims in Indonesia.

## 4. Conclusion

Fintech innovation in waqf management has great potential to optimize waqf funds in Indonesia, which has not been utilized optimally. The use of digital platforms can increase the transparency, efficiency, and accessibility of waqf, as well as open up opportunities for new waqf models such as micro waqf and project-based waqf. However, the main challenges faced are the low digital literacy and sharia finance in the community, as well as the lack of clear regulations related to waqf fintech. Cybersecurity issues are also obstacles that need to be overcome.

To optimize this potential, collaboration is needed between the government, waqf institutions, fintech providers, and the community. The government needs to design regulations that support waqf fintech, while waqf institutions and fintech providers must increase capacity and transparent management. Digital education programs and Islamic finance are also important to increase public understanding of digital waqf. With these steps, waqf fintech can be an effective solution in increasing waqf literacy and optimizing the potential of waqf as an instrument of Islamic philanthropy that has a wide impact.

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