

A Review of Fintech and Waqf Intersections in Academic Debates

Rodame Monitorir Napitupulu^{1*}, Raditya Sukmana²

¹Faculty of Economic and Business, Universitas Airlangga and UIN Syekh Ali Hasan Ahmad Addary Padangsidempuan

² Faculty of Economic and Business, Universitas Airlangga

Abstract: *In 2022, Indonesia was ranked 3rd in the utilization of Islamic fintech on a global scale. Despite this accomplishment, waqf institutions continue to face challenges in embracing fintech. Therefore, this research aimed to investigate the extent of fintech-related research on waqf and its implications for the institutions in effectively harnessing fintech in their activities. It adopted a qualitative research approach, relying on Scopus-indexed documents as the primary source of data. Subsequently, the data were analyzed using the Publish or Perish (PoP) tool, following the Systematic Literature Review with PRISMA procedure, and supplemented with content analysis. The results showed noteworthy insights, where Ascarya, A emerged as the most influential author, while Hudaefi, F.A. claimed the highest number of citations. The publication with the greatest influence was the International Publication of Islamic and Middle Eastern Finance and Management, while the most influential affiliations were Universitas Airlangga and Universiti Brunei Darussalam. Indonesia was the most influential country in generating fintech on the waqf subject of the document. Among the 19 relevant papers examined, only 5 (26.32%) focused on the discussion of fintech's impact on waqf. This statistic highlighted the potential for further development of fintech by waqf institutions. Several opportunities for such development emerge, including the creation of waqf applications, the adoption of crowdfunding fintech, the exploration of waqf blockchain, the implementation of WaqfCoin, and the establishment of online platforms for public reporting of waqf fund activities.*

Keywords: *Fintech; Waqf; Waqf Institutions*

***Corresponding author:** rodame.monitorir.napitupulu-2022@feb.unair.ac.id

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INTRODUCTION

Indonesia was ranked 3rd in the utilization of Islamic fintech in 2022 (Shafaki, 2022). However, fintech was still a big challenge for waqf institutions (The Ministry of National Development Planning, 2018). Waqf is one of the Islamic

financial instruments that has been practised since the birth of Islam. Waqf as sunnah is different from zakat (Yaacob & Yaacob, 2013) but can be in the form of movable and immovable objects (Shulthoni et al., 2022). The potential of waqf is increasing because it can be implemented in various sectors, as an Islamic social finance instrument to improve the welfare of the community by reducing poverty (R. A. Ahmad et al., 2021; Diniyya, 2019; Saiti et al., 2021), helping MSMEs (Fauzia & Musari, 2021), health (Sulistyowati et al., 2022), education (Abd Razak et al., 2020) and other social activities related to Sustainable Development Goals (SDGs) (Hai et al., 2022).

One of the challenges in developing waqf is the optimal use of financial technology (fintech), specifically in facilitating the collection of waqf funds such as cash. The weak utilization of fintech also occurs in different countries such as Bangladesh (Abdel Mohsin & Muneeza, 2018; Hasan, 2022), Uganda (Hamzah et al., 2023) and Indonesia (Ascarya & Masrifah, 2023). Therefore, this issue is important to be studied more intensively.

Indonesia and Malaysia have emerged as global leaders in waqf development, with Indonesia making history in 2020 by becoming the first country to issue Cash Waqf Linked Sukuk (CWLS) (Yunita, 2020). Additionally, according to the Global Islamic Fintech Index (GIFI), Indonesia maintains its position as the third-ranked country in terms of implementing Islamic fintech, with Malaysia leading (Dinar Standard, 2022). These rankings underscore the pressing need for fintech advancements in the realm of waqf.

Waqf is presently receiving significant attention, as indicated by the emergence of extensive research. The literature research published in reputable journals explains several themes namely poverty (Atan & Johari, 2017), cash waqf (Aldeen, 2021; Alshater et al., 2022; Saiti et al., 2021), Islamic accountability (Ainol-Basirah & Siti-Nabiha, 2022; Alshater et al., 2022; Sukmana, 2020), Islamic social finance (Alshater et al., 2022; Sukmana, 2020; Uluyol et al., 2021), governance (Alshater et al., 2022), sustainable development (Uluyol et al., 2021), Islamic law (Sukmana, 2020; Uluyol et al., 2021), management (Ramdani, 2021), education (Rusydia et al., 2021), history and economic development (Sukmana, 2020).

The literature research of fintech on waqf is very limited, perhaps as the first conducted with data derived from Scopus-indexed documents. This is used because of the coverage, peer-reviewed and extensive investigation (Kumar et al., 2022). Consequently, this systematic literature review offers a comprehensive overview of the trends in fintech on waqf. It provides valuable insights and guidance to waqf institutions in the development of waqf by leveraging fintech. The research intends to address the following research questions: Who is the most influential author on the topic of fintech on waqf? and Who is the top-cited author on the topic of fintech

on waqf? What is the most influential journal on the topic of fintech on waqf? What is the most influential affiliation in the topic of fintech on waqf? What is the most influential country on the topic of fintech on waqf? What can be learned by waqf institutions from the literature of fintech on waqf?

The second section is the research method, while the third section is the results and discussion followed by a conclusion where there are implications and references.

RESEARCH METHODS

This research was conducted with a qualitative approach. This method was selected because it is particularly well suited to this type of implementation research to answer complex questions such as how and why efforts to implement best practices (Hamilton & Finley, 2019).

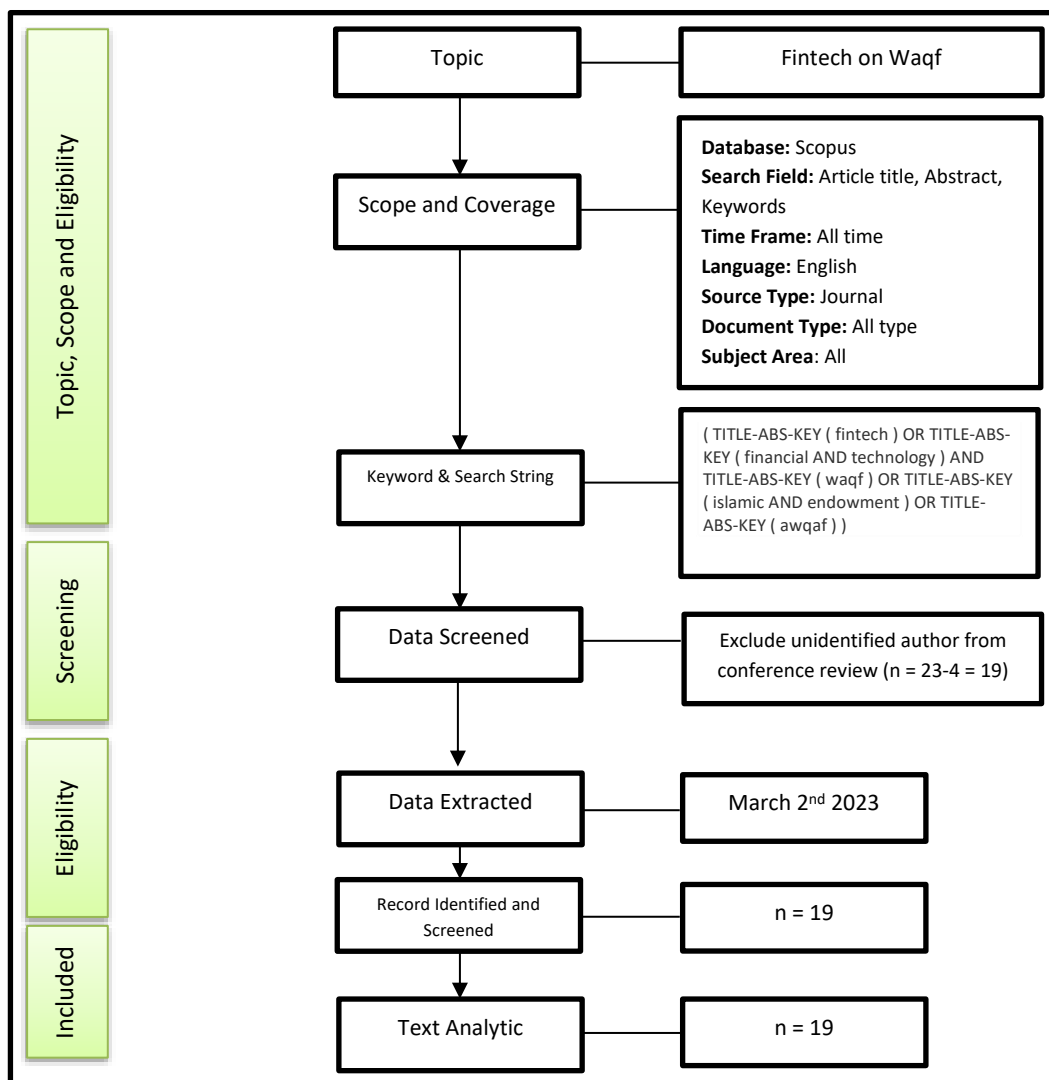


Figure 1. Flow Diagram of Systematic Literature Review Search Strategy

The research adopts a qualitative approach, commencing with a Systematic Literature Review (SLR). SLR proves to be the most appropriate method considering the extensive body of prior research spanning a significant time (Senivongse et al., 2017). Moreover, it is commonly recognized as an evidence-based review method (Senivongse et al., 2017). This research uses SLR with Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) procedures in Islamic social finance research literature article (Abd. Wahab et al., 2022; Martiana & Rahmanto, 2021; Ramdani, 2021).

Different qualitative research on literature has been conducted in the field of Islamic social finance such as zakat (Afifah, 2021; Apriliyah & Arifianto, 2022; Jamal et al., 2022; Sawandi & Aziz, 2021), Islamic microfinance (Ahamad et al., 2016; Martiana & Rahmanto, 2021; Mohamed & Fauziyyah, 2020) and waqf (Medias et al., 2021; Ramdani, 2021; Zulkifli et al., 2022). By employing the PRISMA filtering process, as depicted in Figure 1, the author selected relevant keywords, including "fintech," "financial technology," "waqf," "Islamic endowment," and "awqaf," resulting in 23 documents. Only 19 were Scopus-indexed and subsequently analyzed using the Publish or Perish (PoP) software. The document excluded was the unidentified author from the conference review. The final part is content analysis on existing documents by discussing them with previous research related to fintech on waqf that can be learned by waqf institutions.

RESULTS AND DISCUSSION

The results and discussion is divided into two parts where the findings of the first include general information related to the development of fintech on waqf documents and the content analysis result while part 2 discusses fintech on waqf intensively and the implications for waqf institutions in Indonesia.

Results Research

The field of fintech has shown significant progress, despite the limited number of papers dedicated to this topic. However, the existing literature indicates numerous opportunities for conducting comprehensive research in this area. To gain an overview of the overall progress, the Publish or Perish tool was used. The result showed that out of the 19 selected documents, there were a total of 95 citations. This translates to an average of 5.59 and 5.00 citations per year and document, respectively. For a detailed breakdown of these citation metrics, Table 1 presents the relevant information on fintech-related research on waqf.

Table 1.
Citation Metrics of Fintech on Waqf Research

Publication years	2006-2022
Citation Years	17
Papers	19
Citations	95
Cites/year	5.59
Cites/paper	5.00
Authors/paper	2.37
h-index	5
g-index	9
hI, norm	4
hI, annual	0.24
hA-index	3
Papers with ACC >= 1,2,5,10,20	8,4,3,1,0

Source: Processed Data by Publish or Perish

Research Development of Fintech on Waqf

The analysis results from Scopus show that in the last 17 years, there have been fluctuating developments related to the topic of fintech on waqf. However, 2022 looks like the most productive year where the most papers related to the topic were published, namely 7 papers, which increased sharply from 2021, which only produced 2 papers as shown in Figure 2.

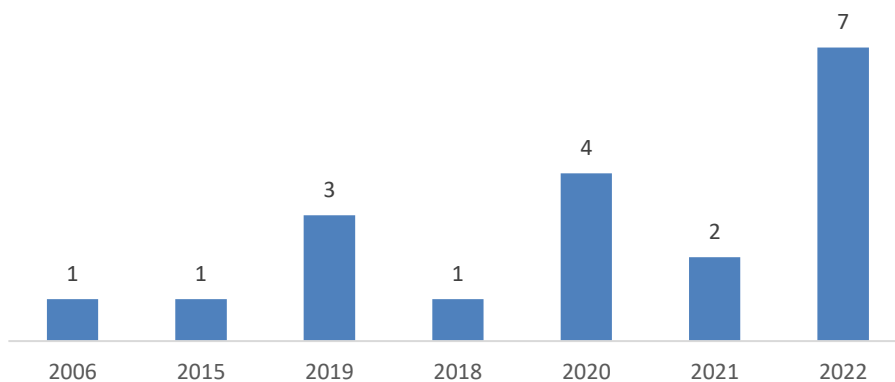


Figure 2. Research Trend on Fintech on Waqf

This paper shows that the most productive researcher related to fintech on waqf is Ascarya, A., who produced 2 papers, followed by others who have each produced 1 paper. Details for the 45 researchers on the topic of fintech on waqf can be seen in Table 1.

Table 1. Authors of Fintech on Waqf Documents

Authors	Number of Paper	Percentage (%)
Ascarya, A.	2	4.44
Zaimsyah, A.M.	1	2.22
Yoshida, E.	1	2.22
Yacoob, H.	1	2.22
Umar, U.H.	1	2.22
Trianto, B.	1	2.22
Tajudin, M.	1	2.22
Supriani, I.	1	2.22
Suprayogi, N.	1	2.22
Sumardi, A.	1	2.22
Sukmana, R.	1	2.22
Smedlund, A.	1	2.22
Shafiq, A.	1	2.22
Sakti, A.	1	2.22
Rohman, P.S.	1	2.22
Ratnasari, R.T.	1	2.22
Petra, S.	1	2.22
Pambuko, Z.B.	1	2.22
Omar, R.	1	2.22
Nahar, H.S.	1	2.22
Muneeza, A.	1	2.22
Mohd Hidzir, P.A.	1	2.22
Medias, F.	1	2.22
Masrizal	1	2.22
Mahphoth, M.H.	1	2.22
Laila, N.	1	2.22
Kayani, U.N.	1	2.22
Ismail, S.	1	2.22
Irfan, H.	1	2.22
Hudaefi, F.A.	1	2.22
Hassan Farooqi, A.	1	2.22
Hasan, A.K.M.K.	1	2.22
Habib, F.	1	2.22
Fianto, B.A.	1	2.22
Danlami, M.R.	1	2.22
Dakash, M.A.	1	2.22
Cattelan, V.	1	2.22
Azrak, T.	1	2.22
Aziz, R.P.	1	2.22
Artha, E.U.	1	2.22
Ali Shah, S.A.	1	2.22
Alaeddin, O.	1	2.22
Ahmed, D.	1	2.22

Ahmad, A.U.F.	1	2.22
Abdel Mohsin, M.I.	1	2.22

Considering the citations per year, it is evident that 11 authors have received varying numbers. Furthermore, the paper titled "How does Islamic fintech promote the SDGs? Qualitative evidence from Indonesia" by Hudaefi, F.A. has garnered the highest number of citations, reaching 27. The papers titled "Islamic social capital and networking" by Hassan Farooqi, A. and "Accountability through accounting and reporting lenses: lessons from an awqaf institution in a Southeast Asian country" by Yacoob, H. have garnered significant citation counts, with both papers receiving 13 citations. These works have attracted scholarly attention and have been recognized for their valuable contributions to the field. However, when assessing the citation per year, Ascarya, A.'s paper titled "The role of Islamic social finance during the Covid-19 pandemic in Indonesia's economic recovery" emerges as the frontrunner with a citation per year of 11.00. Table 2 provides a comprehensive overview of these citation metrics.

Table 2. Top Cited Papers of Fintech on Waqf

Authors	Cites	Cite per year
Hudaefi, F.A.	27	9.00
Hassan Farooqi, A.	13	0.76
Yacoob, H.	13	1.63
Ascarya, A.	11	11.00
Rohman, P.S.	6	3.00
Ascarya, A., A. Sakti	5	5.00
Irfan, H.	5	1.00
Tajudin, M.	4	1.33
Cattelan, V.	4	0.80
Alaeddin, O.	3	1.50
Abdel Mohsin, M.I.	2	0.40

Source: Processed Data by Publish or Perish

Based on an analysis of 19 papers investigating fintech on waqf, it is evident that the subject areas covered by these papers vary. However, the most prevalent subject area is Economics, Econometrics, and Finance, with 11 papers, closely followed by Business, Management, and Accounting, with 10 papers. This observation holds significant relevance due to the keywords examined on Scopus, namely fintech (financial technology) and waqf or awqaf or Islamic endowment. The keywords are intricately linked to the two subject areas, as shown in Figure 3.

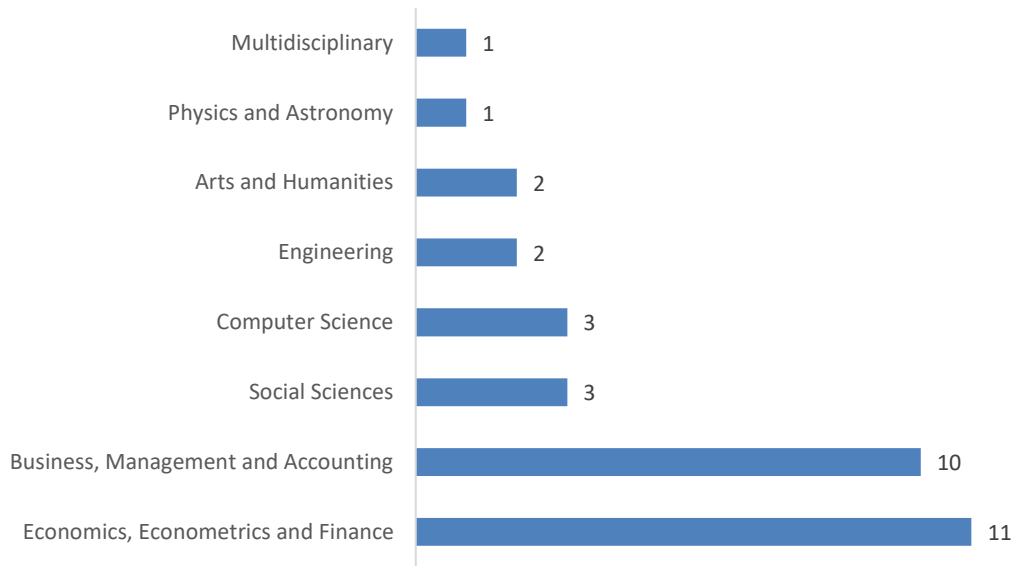


Figure 3. Varian of Subject Area of the Fintech on Waqf Research

A diverse range of documents has emerged from the research on fintech on waqf. Articles constitute the majority, with a total of 10 papers, followed by book chapters with 5 papers. The remaining documents comprise an equal number of conference papers and books, each consisting of 2 publications, as shown in Figure 4.

■ Article ■ Book Chapter ■ Conference Paper ■ Book

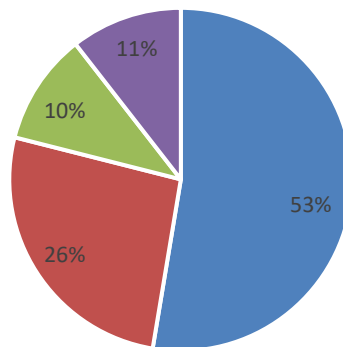


Figure 4. Document Type of Fintech on Waqf Research

Based on the source of publication of fintech research documents on waqf in the last 17 years, the journal with the most papers is the International Journal of Islamic and Middle Eastern Finance and Management, which is 3 papers. Subsequently, two additional journals, namely Humanomics and Fintech in Islamic Finance

Theory and Practice, have contributed to the research with 2 papers each, as shown in Table 3.

Table 3. Source Document of Fintech on Waqf Research

Journal	Number of Document	Percentage (%)
International Journal Of Islamic And Middle Eastern Finance And Management	3	20
Humanomics	2	13.33
Fintech In Islamic Finance Theory And Practice	2	13.33
Revitalization Of Waqf For Socio-Economic Development	1	6.67
Qualitative Research In Financial Markets	1	6.67
Lecture Notes In Networks And Systems	1	6.67
Journal Of Physics Conference Series	1	6.67
Journal Of Islamic Marketing	1	6.67
Journal Of Information Technology Management	1	6.67
Islamic Social Finance Entrepreneurship Cooperation And The Sharing Economy	1	6.67
International Journal Of Advanced Science And Technology	1	6.67
Institutional Islamic Economics And Finance	1	6.67
Innovative Strategies For Implementing Fintech In Banking	1	6.67
Heliyon	1	6.67
Digital Transformation In Islamic Finance A Critical And Analytical View	1	6.67

The list of top 15 researcher affiliations in the field of fintech on waqf demonstrates considerable variation. Interestingly, Universitas Airlangga and Universiti Brunei Darussalam have emerged as the leading affiliations, with an equal number of publications, namely 3 papers. Universitas Airlangga is situated in Indonesia, while

Universiti Brunei Darussalam is located in Brunei Darussalam falling within the Southeast Asian region, as shown in Table 4.

Table 4. Top 15 Affiliation of Researchers for Fintech on Waqf Papers

Affiliation	Number of Paper	Percentage (%)
Universitas Airlangga	3	20
Universiti Brunei Darussalam	3	20
University of Darussalam Gontor	2	13.33
Abdurrab University	1	6.67
Institut Agama Islam Darussalam (IAID) Ciamis		6.67
BAZNAS Center of Strategic Studies	1	6.67
Mercy Malaysia Malaysia	1	6.67
Institut Agama Islam Tazkia	1	6.67
Mayasari Business Polytechnic	1	6.67
Institute for Banking and Financial Studies	1	6.67
STEI Iqra Annisa	1	6.67
STAI Hubbulwathan	1	6.67
Alif Technologies	1	6.67
Research Center for Islamic Economics (IKAM)	1	6.67
QM University of London	1	6.67

The country of origin of researchers in fintech on waqf is influenced by this phenomenon. According to Figure 5, a significant proportion of research papers are authored by scholars from Indonesia, specifically a total of 7 papers. Following closely, Malaysia contributed 5 papers, whereas the United Arab Emirates contributed 4.

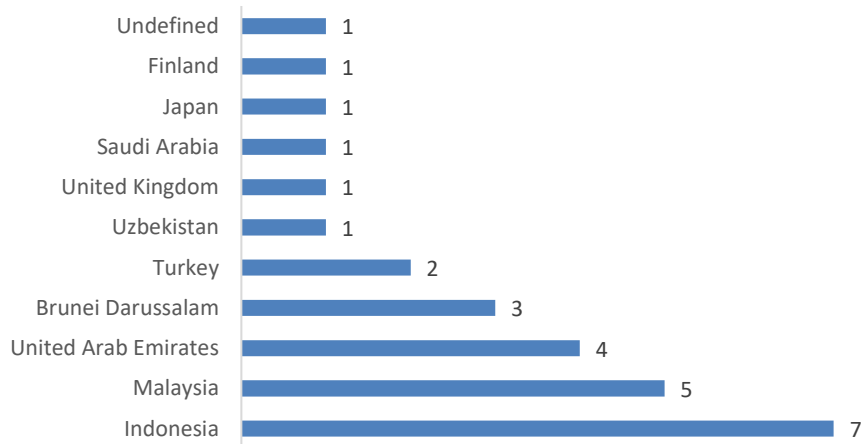


Figure 5. Country of Authors on Fintech on Waqf Research

Content Analysis and Lessons to be Learned by Waqf Institutions

Based on the distribution of researchers, the largest proportion consists of single authors, accounting for 7 papers (35%). Subsequently, papers authored by 4 or more researchers constitute the second-largest group, with 5 papers (25%). There are an equal number of papers authored by 2 and 3 researchers, each comprising 4 papers (20%). These findings indicate that research collaboration in the field of fintech on waqf is presently limited and provides an opportunity for enhancement to achieve greater visibility. Figure 6 provides a graphical representation of this data.

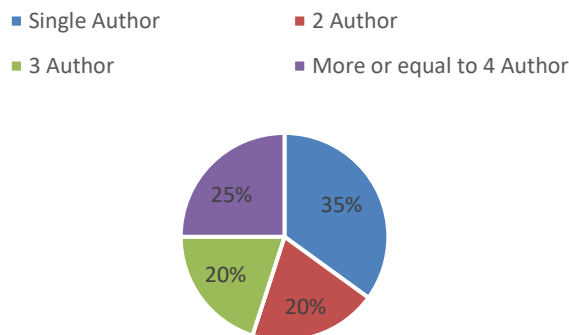


Figure 6. Publication Category Based on Number of Authors

Among the articles focusing on fintech on waqf, there are a total of 10 documents. These articles can be classified into two main approaches. A significant majority of 8 papers adopt a qualitative approach, while the remaining articles employ a quantitative method. This observation suggests that there is a potential for further empirical investigations in the field of fintech on waqf, as shown in Figure 7.

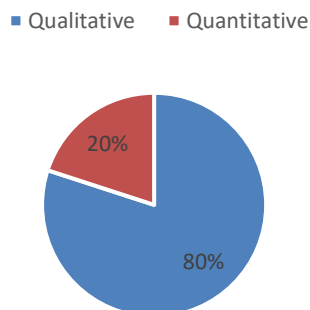


Figure 6. Category Based on Research Approach

Based on Table 5, the majority of documents do not discuss fintech on waqf in a large portion. There are 7 documents with a small portion of fintech in various topics (Islamic economics, Islamic finance, Islamic social finance, Islamic social capital, crowdfunding) namely 36.84%. Meanwhile, there are only five documents that focus on waqf fintech in a very large portion (26.32%), the others examine fintech in Islamic finance (21.05%) and fintech in Islamic social finance (15.79%), as shown in Table 5.

Table 5. Themes of Fintech on Waqf Literature

No.	Themes	Authors	Total Document	Percentage (%)
1	Fintech in Waqf	(Abdel Mohsin & Muneeza, 2018; Artha et al., 2020; Hasan, 2022; Sukmana et al., 2022; Yoshida, 2019a)	5	26.32
2	Fintech in Islamic Finance	(Alaeddin et al., 2021; Hudaefi, 2020; Irfan & Ahmed, 2018; Tajudin et al., 2020)	4	21.05
3	Fintech in Islamic Social Finance	(A. U. F. Ahmad & Habib, 2020; Ascarya & Sakti, 2022)	3	15.79
4	Others	(Ascarya, 2022; Cattelan, 2018; Hassan Farooqi, 2006; Laila et al., 2022; Rohman et al., 2021; Shafiq, 2022; Umar & Danlami, 2022; Yaacob et al., 2015)	7	36.84

This research specifically concentrates on documents that extensively discuss waqf (Sukmana, 2020). Among the total of 19 documents reviewed, only five documents extensively address the intersection of fintech and waqf. One of these papers, titled "Determinant factor of crowdfunders' behavior in using crowdfunding waqf model in Indonesia: two competing models," offers a valuable framework for waqf institutions to embrace financial technology for the establishment of productive and social waqf. The findings indicate that acceptance models have a favorable and significant impact on the behavioral intentions of crowdfunders, while the Unified Theory of Acceptance and Use of Technology does not yield any substantial influence (Sukmana et al., 2022).

Another research, titled "Evaluation of WafakMu fundraising platform using HOT-FIT method," provides an assessment of a fintech-based waqf application that

employs a crowdfunding concept known as WakafMu. This application was initiated by Muhammadiyah, the largest Islamic religious organization in Indonesia (Artha et al., 2020). The existence of the WakafMu application serves as concrete evidence that fintech plays a pivotal role in raising waqf funds, particularly in the context of Indonesia.

The book chapter, published in 2022, has discussed waqf as a philanthropic donation widely practised. However, waqf regulations and administration are considered outdated. In addition, other problems are high monitoring costs and governance that have not been running well. Fintech on waqf is recommended to the regulators specifically to help the waqf administration in Bangladesh (Hasan, 2022). The book chapter entitled "Fintech-enabled cash waqf: effective intermediary of social finance" has also discussed how fintech with high use of Information Communication Technologies (ICT) can absorb the potential of cash waqf, specifically in the context of social finance. However, legal treatments and other supporters are needed for effective running. The paper also mentioned that fintech-enabled cash waqf can contribute to socio-economic development in the Muslim community (Yoshida, 2019b). The other book chapter entitled "Integrating waqf crowdfunding into the Blockchain: A modern approach for creating a waqf market" mentioned that there is great potential in the world of waqf called WaqfCoin. It uses sophisticated technology that integrates crowdfunding and blockchain to promote Islamic endowment (Abdel Mohsin & Muneeza, 2018).

Research Implications

Only two articles and three book chapters on fintech on waqf have been indexed in Scopus. These publications primarily delve into an extensive examination of the subject matter between 2006 and 2022. Consequently, this suggests that current research is confined to a limited scope of dissemination. The research implications for waqf institutions can be categorized based on the specific types of fintech implementation and the corresponding potential discussed in various scholarly papers.

Waqf Fund Collection through Waqf Application and Crowdfunding Fintech

Despite the dominance of book chapters in discussing fintech on waqf, these documents provide valuable insights. An exemplary illustration of this is WakafMu, an initiative launched by Muhammadiyah, which stands as one of the prominent Islamic organizations in Indonesia. This application serves as an inspiration for waqf institutions and fintech companies, demonstrating the potential to accelerate the collection of waqf funds efficiently and effectively. Waqf institutions can enhance their efforts by developing additional waqf collection applications and integrating them with various e-commerce platforms, thereby increasing the overall

amount of funds collected. Furthermore, with the assistance of policymakers, the Indonesian Waqf Board can play a crucial role in facilitating nazir (waqf trustees) by embracing crowdfunding and other financial technologies, thus enhancing the quality and impact of their initiatives (Sukmana et al., 2022). The vast potential of waqf continues to present challenges, necessitating the development of diverse smartphone-based applications that integrate waqf payments. These applications aim to simplify the process for waqifs to fulfill their waqf obligations. This approach aligns with the inherent benefits of utilizing fintech in enhancing waqf management (Alisya & Ihsan, 2023; Zakariyah et al., 2021).

Waqf Blockchain

The utilization of waqf blockchain technology in Indonesia holds significant potential for optimization, primarily due to the country's Muslim population surpassing 80% (Huda, 2021). The implication for waqf institutions is the necessity for standardization of contracts established by these institutions on fintech platforms. Waqf institutions should strive to optimize the use of blockchain technology, given its tremendous potential for waqf development. However, it is crucial to address the current absence of regulations from waqf institutions on the utilization of blockchain technology in waqf practices within Indonesia. Even though the implementation of blockchain technology holds significant potential for advancing the Islamic financial industry, including zakat, waqf, and sukuk, the lack of clear regulations and standards needs to be addressed (Alaeddin et al., 2021; Ascarya, 2022).

WaqfCoin

An additional factor worth considering is WaqfCoin, as mentioned in a previous research conducted by (Abdel Mohsin & Muneeza, 2018). The concept exhibits remarkable potential concerning the advancement of blockchain technology, highlighting significant opportunities for the integration of crowdfunding and blockchain through cutting-edge technological solutions. WaqfCoin can be a brilliant solution in the metaverse era and it is possible to be developed by waqf institutions. However, it is essential to establish comprehensive guidelines for the utilization of WaqfCoin to prevent any potential deviations from Sharia principles and the prevailing regulations. This proactive measure ensures compliance with the necessary standards and safeguards against any undesired outcomes.

Online Public Reporting of Waqf Fund

Further exploration is required in the field of waqf management, as highlighted by (Harahap & Qomar, 2022). The improvement of waqf governance and administration as well as various ICT optimization opportunities can be pursued by

waqf institutions to achieve better management. The online public reporting of waqf fund finances is considered very successful as the most effective way to report funds (Yaacob et al., 2015).

CONCLUSION

Since 2006, research on fintech in the context of waqf have been in existence, and this trend has experienced a gradual increase. Ascarya, A., emerges as the most influential author in this field, while Hudaefi, F.A. stands out as the top-cited. The International Journal of Islamic and Middle Eastern Finance and Management holds significant influence as the most renowned journal. Moreover, two institutions, namely Universitas Airlangga from Indonesia and Universiti Brunei Darussalam, have emerged as the most influential affiliations. Among the countries contributing to the production of documents on the theme of fintech in waqf, Indonesia holds the most significant influence. Discussions that delve into the intricacies of fintech are dominated by documents in the form of book chapters. A comprehensive content analysis of the literature shows that the optimization of fintech remains a weakness in Indonesia. Consequently, waqf institutions can address this by standardizing contracts across different fintech platforms, ensuring all existing standards are complemented by clear rules. The integration of crowdfunding and blockchain technologies can be leveraged, with the utilization of crowdfunding-based financial technology when creating applications for waqf fund collection. Additionally, waqf institutions should embrace Information and Communication Technology (ICT) to ensure that all processes involving the collection, management, and distribution of funds adhere to Islamic principles and predetermined regulations.

Research Limitations

It is important to note the limitations of this research and the analysis of paper data was confined to sources indexed in Scopus, overlooking other trusted sources such as WoS, ABDC, Google Scholar, Semantic Scholar, and other paper indexers warranting further exploration. Additionally, this research primarily relied on content analysis of existing paper data. By incorporating diverse data sources from other indexers, it is possible to expand the pool of papers, potentially enabling bibliometric analysis with VoSViewer or R package. Significant transformations are anticipated in the Metaverse era, necessitating attention from governments as regulators and waqf institutions worldwide. Fintech on waqf assumes paramount importance in optimizing the collection, management, and distribution of waqf funds.

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