

## Gauging Customer Sentiment Regarding Indonesian Islamic Digital Banks

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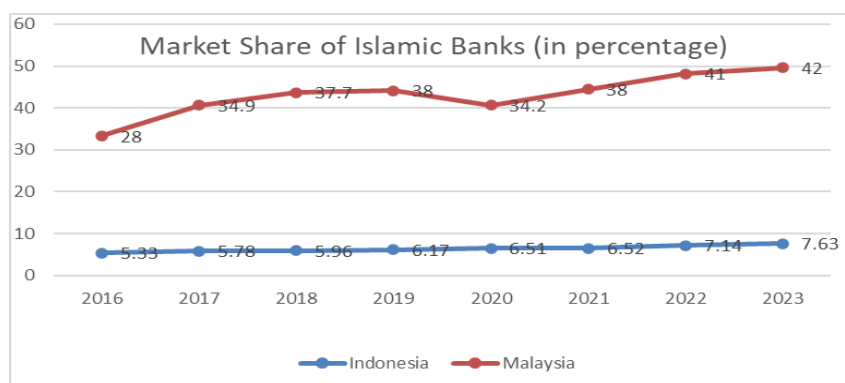
## Introduction

The rapid advancement of technology and global pandemics have created enormously disruptive challenges that cannot be avoided, despite the positive conditions for national and worldwide economic growth (Riza & Wijayanti, 2024). This circumstance reshaped the financial landscape and resulted in an age of banking that is distinguished by simplicity of uses, accessibility, and personalization (Ananda et al., 2020). The usage of digital banking then emerged as a preferred alternative for transactions and even a new trend in the banking sector, since it offers several benefits (Nawaz et al., 2020). Previous studies have shown that a bank could be able to hold onto its market share if it embraces and adjusts to this new trend (Paminto et al., 2022; Thakor, 2020).

Islamic digital banking has emerged in Indonesia, a country with an expanding Muslim population, as a result of the convergence of digital innovation and Islamic financial principles. The Indonesian government considers digitization as one of the primary factors in facilitating the development of Islamic banking and has prioritized the assessment of digital transformation and technological adoption strategies (Hidayat & Kassim, 2023). Islamic digital banking has an enormous opportunity to support market expansion since it can accommodate people's intention to use technology through digital banks and advance the notion of an Islamic bank on a digital basis (Harahap et al., 2023).

Therefore, Islamic digital banks can be an advantageous instrument as Indonesia is still having trouble increasing its market share of Islamic banking and lags significantly behind Malaysia in terms of proximity. By the end of 2023, Islamic banking in Indonesia had increased its market share to 7,63% (OJK, 2023), unfortunately falling well short of Malaysia, which according to Bank Negara Malaysia had contributed 41% by the end of 2022 (BNM, 2022), and had increased to 42% by the end of 2023 (Fitch Ratings, 2024). The following figure compares these two countries' market shares.

Figure 1. Market Share of Islamic Banking in Indonesia and Malaysia (2016-2023)



Source: BNM and OJK

Indonesia presently has two Islamic digital banks, according to statistics provided by the Indonesia Financial Services Authority / Otoritas Jasa Keuangan (OJK). These banks are Bank Aladin Syariah which operates as a full-fledged Islamic commercial bank, and Bank Jago Syariah an Islamic business unit as a subsidiary of conventional bank namely Bank Jago (OJK, 2024). Since their establishment, these two Islamic digital banks have acquired an expanding user base (Qulub & Putri, 2024).

Developing successful strategies and policies to ensure the continued growth and success of Islamic digital banks requires a thorough analysis and understanding of the sentiment shift in customer experiences. Through this analysis, the customer experiences in using products and services from their comments will be extracted to create actionable knowledge for the entity (Shaik et al., 2023). By identifying emerging trends and consumer needs, Islamic digital banks can position themselves to capitalize on opportunities and mitigate risks (Harahap et al., 2023).

Following that, this study delves into the sentiment shift among Indonesian customers of Islamic digital banks, particularly customers of Bank Aladin Syariah and Bank Jago Syariah, examining the factors influencing their experiences and expectations. By analyzing these dynamics, the study aims to uncover critical implications for Islamic digital banks in tailoring their offerings to meet the evolving needs of the Indonesian market. This study seeks to answer the questions: (1) To what extent has sentiment towards Indonesian Islamic digital banking shifted? (2) What difficulties and possibilities does Indonesian Islamic digital banking present to individuals?

This study also varies from prior research in that it employs Instagram, one of the popular social media platforms. The study offers two contributions to the field of literature. *First*, it complements the array of literature on the adoption of Islamic digital banking, through a public sentiment. *Second*, this study analyzes the potential and

difficulties of Islamic digital banking. *Third*, this study attempts to provide valuable insights into consumer behavior and its implication on industry strategies. Thus, it can be used as a reference for policymakers in formulating better strategies for improving Islamic digital banking services.

Drawing from prior research, this study will employ the Python programming language and the Naïve Bayes Classifier method to conduct sentiment analysis on Indonesian Islamic digital banking services through Instagram, specifically Bank Aladin Syariah, and Bank Jago Syariah. Apify Instagram comment scrapper and Google Colab are the tools utilized in the analysis process. The Naïve Bayes Classifier method will be used to generate predictions for reviews with positive and negative categories and Python was chosen for its ease of use and application.

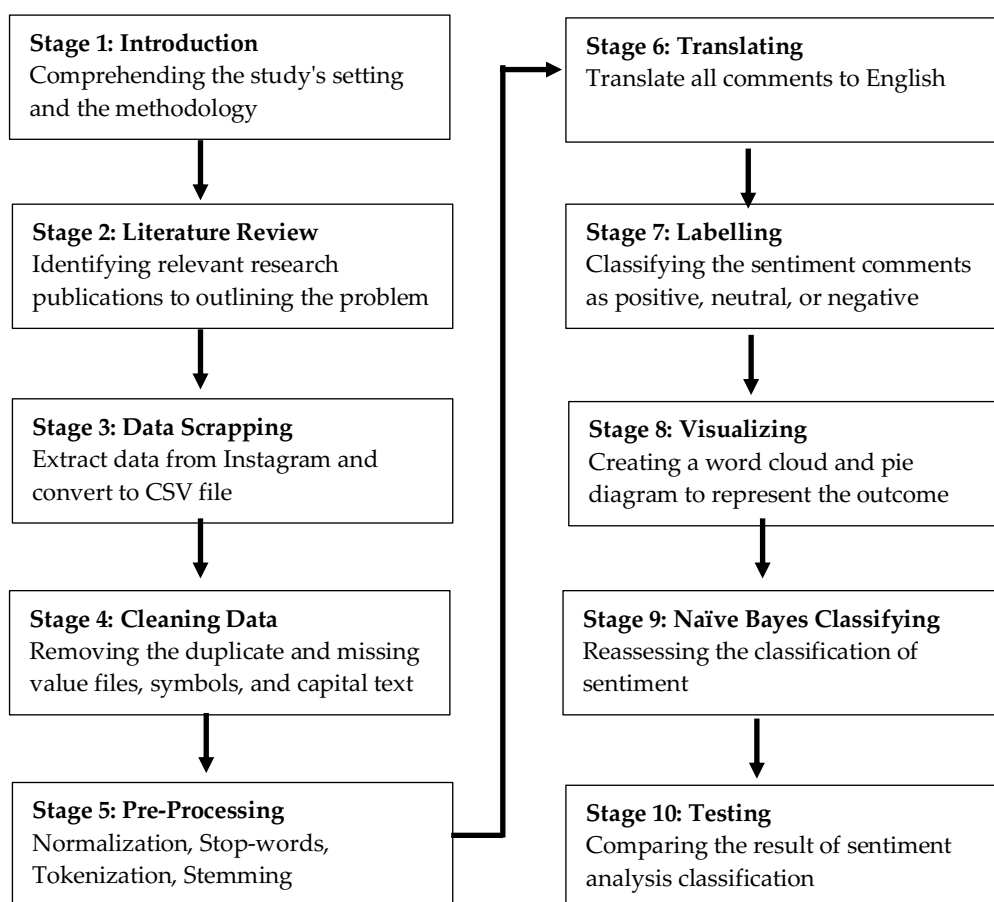
## Methodology

The initial stage of this study method is to extract data from comments made on the official Instagram accounts of two Indonesian Islamic digital banks, Bank Aladin Syariah and Bank Jago Syariah. Applying an Instagram comment scraper, 319 comments were extracted. The data extraction results are saved in a CSV file. Data cleaning was done before it was run. The purpose of this data-cleaning process is to eliminate redundant and missing value files, symbols, and uppercase text.

The pre-processing stage, which occurs before running the data, is carried out in four steps. The first step is known as "*normalization*". All the acronyms and mistake text were replaced with the original term in this normalization phase. The next step is "*stop-words*" to remove superfluous words and conjunctions. The next step is called "*tokenization*". It is a method of decomposing a text sequence into distinct parts called tokens (Fikri & Sarno, 2019). Following that, these tokens are used as inputs for several procedures, including text mining and parsing. It facilitates models' attention to the significance of specific elements instead of reading the text as a whole. Finally, "*stemming*" was used to transform affix terms into root words.

After pre-processing, the translation stage was conducted. Since most users do not use English, it is important to translate the data comments into English. Additionally, most of the software available for evaluating sentiment comments only supported English. "*Textblob*" categorization is used in the labeling process to categorize sentiment comments as positive, neutral, or negative. The word cloud technique was used for displaying the sentiment-related words and a pie diagram was used to depict the sentiment percentages.

Figure 2. Framework Phases of the Study



Source: Processed Data

Furthermore, the Naïve Bayes technique is employed to evaluate text blob categorization outputs and detect or filter spam. The accuracy of the Naïve Bayes Classifier data result was discovered to be 73%, a rather high proportion that generates a decent outcome. The results of this comparison are then taken to the testing stage to determine whether the data processing results are appropriate. Figure 2 illustrates the stages of this study.

## Results and Discussion

### *Islamic Digital Banking Adoption*

Digital banking provides customers the flexibility to obtain financial services independently (self-service), as opposed to visiting a bank (Anggraeni et al., 2021), and makes it easier for them to access banking services through digital channels like the Internet and mobile banking (Chauhan et al., 2022; Levy, 2022). Meanwhile, digital banks an entirely online or digitally-only services that use exclusively online or digital banking and do not have any physical branches (Choi et al., 2020; Verhoef, 2021).

Addressing previous literature, Islamic digital banks can be referred to as financial institutions that operate exclusively through digital channels and adhere to Islamic finance principles (sharia law). Islamic digital banks offer a range of sharia-compliant banking products and services, such as saving accounts, financing, and investments, accessible through mobile apps, websites, or other digital platforms, and branchless (Sarifah & Darwanto, 2024).

Similar to traditional Islamic banks, Islamic digital banks strictly adhere to sharia principles by avoiding usury, *maysir* (gambling), *gharar* (uncertainty or speculation), as well as the carrying out activities prohibited in the Islamic religion (Muharromah et al., 2024). Simultaneously, Islamic digital banks have the potential to bring individuals who lack access to traditional banking infrastructure or live in remote regions into the official financial system (Riza & Wijayanti, 2024), especially for those who have Islamic values preferences.

### ***Customer Experiences in Digital Banking***

Customer experience is the sum of interactions between a customer and a brand, resulting in emotional, cognitive, and behavioral responses (Moliner-Tena et al., 2019). Customer value and experience are intertwined, shaped by individual perceptions and influencing emotional, physical, intellectual, and spiritual well-being (Komulainen & Saraniemi, 2019). Essentially declared, customer experience is the cumulative impact of all interactions with a brand (Trivedi, 2019).

In the study related to digital banking (Shin et al., 2020), measured customer experience using employee-customer engagement, security, convenience, and usefulness to highlight the characteristics that set digital banking apart from traditional banking. To increase consumer experiences (Islam et al., 2020), emphasized the significance of dynamic, aesthetically pleasing, adaptable, user-friendly, and captivating websites. Another study revealed that customer awareness, perceived utility, and simplicity of use customer experience were found to be important factors influencing the adoption of mobile banking (Shaikh et al., 2020).

Additionally (Ashrafpour et al., 2022), used two lenses to study the customer experience in Islamic banking, functional factors (social interaction and practical advantages) and affective elements (usability and enjoyment). Meanwhile (Chauhan et al., 2022), used customer experience to assess how digital banking affected service evaluation and created a framework that identifies the key elements of digital banking that have the biggest effects on banks' financial performance.

### ***Sentiment Analysis on Social Media Platforms***

Social media platforms have drawn a lot of users in the past few years, who use them to monitor arguments and comments on particular topics in addition to

communicating (Adriana et al., 2024). Several studies, including ones by (Santoso, Jonathan et al., 2023; Soliha et al., 2023; Sulistyani et al., 2024), measure the sentiment analysis of digital banking using social media. Sentiment analysis is the technique of figuring out what a text's emotions or ideas are (Xu, et al., 2022). This can be done for user comments, posts on social media, or other text formats (Medhat et al., 2014). Sentiment analysis also makes it possible to learn from product evaluations by recognizing neutral, positive, and negative reactions in comments. Using the data of sentiment analysis can help to improve the product, pinpoint areas that need to be fixed, and learn what the needs of customers are (Ali et al., 2024).

Instagram functioned as a key source for this study since it lets users share their opinions using text, images, emotion icons, hashtags, and other formats (Blanco-Moreno et al., 2024). Instagram also actively be used by two billion users globally per month by the beginning of 2024 (Dixon, 2024). It establishes Instagram as a reliable tool for analyzing how people behave in response to a phenomenon.

Based on the data processing results, three analytical categories will be covered. The public's sentiment of Bank Aladin Syariah, Bank Jago Syariah, and overall two of these institutions will be addressed in this discussion.

#### *Sentiment Analysis on Bank Aladin Syariah*

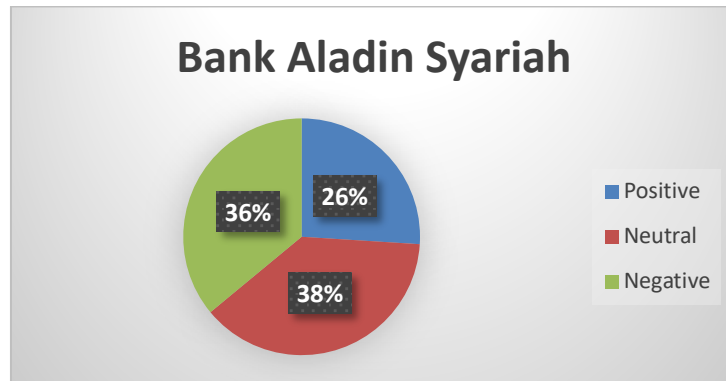
According to their official website, PT Bank Aladin Syariah Tbk, formerly known as PT Bank Net Indonesia Syariah Tbk, is an Indonesian banking company with its headquarters located in Jakarta. This company was established in 1994, rebranded as Aladin Syariah in 2021, and is Indonesian first Islamic digital bank. The Aladin app has been available to the public since 2022. Servicing those who encounter difficulties accessing banking services is the bank's primary goal in its operation (Aladin Bank, 2024a).

Aladin Syariah uses the username aladinbank.id for their official Instagram account. Based on their recent reports (Aladin Bank, 2024b), the primary approach is constructing an offline-to-online (O2O) concept in partnership with Alfa Mart, one of Indonesia's biggest franchise networks, which has the largest service base in Muslim-majority regions such as the provinces of West Java, Central Java, East Java, and Banten. As of the end of 2023, it was reported that over 5,2 million apps have been installed, over 3,1 million people have signed up, and total funding reached more than IDR 3,2 trillion, total financing reached more than IDR 3,1 trillion, and total assets of IDR 7,9 trillion.

Visualization of terms often used in user comments of the Bank Aladin Syariah is obtained from the outcomes of data preprocessing. The data visualization for positive, neutral, and negative comments is done separately. A classification of the

percentage of comments and a word cloud is the two forms in which this data visualization is displayed.

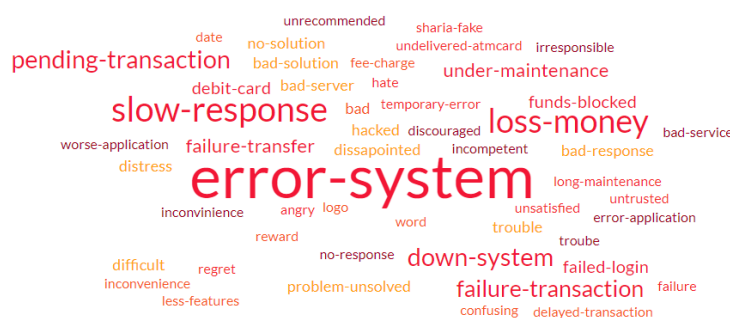
Figure 3. Sentiment Classification of Bank Aladin Syariah



Source: Processed Data

According to Bank Aladin Syariah sentiment analysis in Figure 3, 38% of users feel ambivalent about utilizing the bank's services, 36% of users were negative, and 26% were positive. Based on the data provided, it is evident that management has to focus more as over 70% of users have not benefited entirely from Bank Aladin Syariah services. The fact that 36% of users expressed unfavorable sentiment also shows how unsatisfied customers are with the products and services, thus management needs to act more proactively to make improvements.

Figure 4. The Negative Word Cloud on Bank Aladin Syariah Sentiment



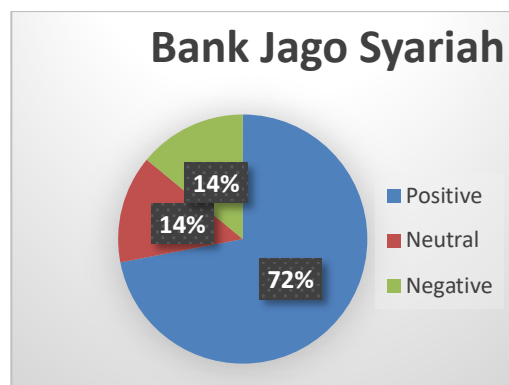
Source: Processed Data

Figure 4 provides a more comprehensive summary of the unpleasant experiences customers have had with Bank Aladin Syariah offerings. Some of the obstacles that have to be overcome are the unfavorable experiences brought on by faulty systems and unresolved issues. Another common issue is that the bank frequently fails to complete transactions after their funds have been debited.





Figure 6. Sentiment Classification of Bank Jago Syariah



Source: Processed Data

Figure 6 shows that 72% of users have positive opinions about the services they receive, 14% are neutral, and 14% have unfavorable perceptions. This may indicate that the performance of Bank Jago Syariah has been heading upward, although performance still must be improved in several areas.

Figure 7. The Negative Word Cloud on Bank Jago Syariah Sentiment



Source: Processed Data

Figure 7 lists some sectors that Bank Jago Syariah needs to maintain and develop. System instability remains a significant challenge in maintaining positive customer sentiment of Bank Jago Syariah. Some customers also consider that the bank has committed dishonesty, defrauding them, some of the regulations are also excessively complex, and the features' functionality is confusing.

Figure 8. The Positive Word Cloud on Bank Jago Syariah Sentiment

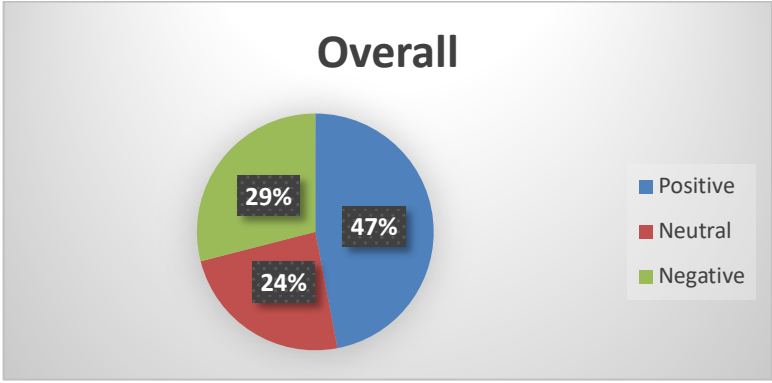


Source: Processed Data

The favorable sentiment can be defined as that some consumers feel Bank Jago Syariah is the best Islamic digital bank, they also believe the bank offers great services, operates following sharia principles, and provides beneficial products.

*Sentiment Analysis on Overall Banks*

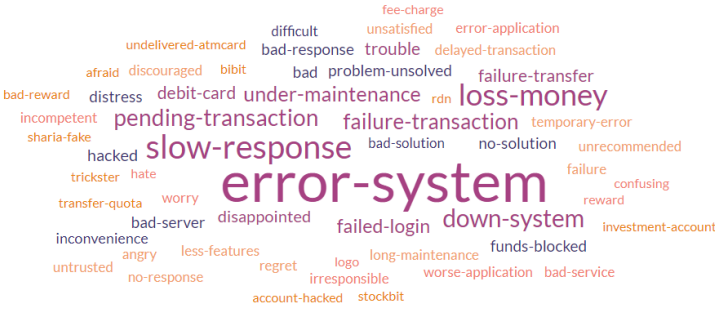
Figure 9. Sentiment Classification of Overall Bank



Source: Processed Data

This section consists of the discussion of overall sentiments about the two Islamic digital banks discussed in this study. It is apparent from its background of establishment that Islamic digital banks are relatively new. However, the information in Figure 9 shows that the positive sentiment of Islamic digital banks is still at 47% (less than half), neutral sentiment at 24%, and negative sentiment at 29%. This demonstrates that Islamic digital banks are still not particularly proficient at providing financial services in Indonesia. Considering that all of the digital Islamic banking services have been offered for less than five years, there is still an excellent opportunity to be realized with a dominant positive percentage value that is higher than others.

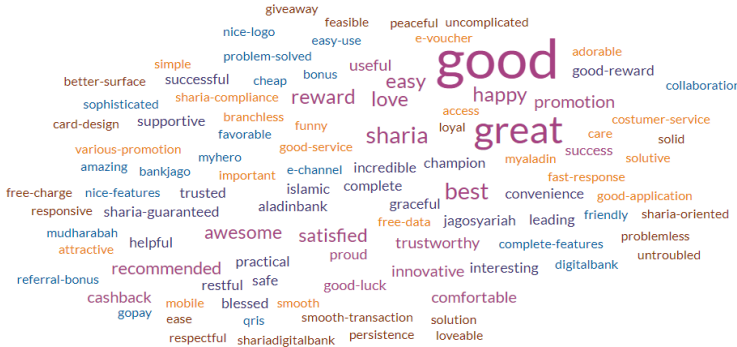
Figure 10. The Negative Word Cloud on Overall Bank Sentiment



Source: Processed Data

Echoing several previous studies about digital banks the growth of digital banking has been hampered by the lack of information technology (Juliana et al., 2024; Mehralian & Khazaei, 2022), particularly in Islamic digital banks (Hidayat & Kassim, 2023). Figure 10 provides a more detailed explanation of the difficulties that Islamic digital banks address depending on customer’s sentiment. App functionality problems typically escalate into major problems. Islamic digital banking apps may encounter errors or malfunctions that impair their performance, just like any other digital platform. This could involve issues with paying bills, transferring money, registering, or logging in.

Figure 11. The Positive Word Cloud on Overall Bank Sentiment



Source: Processed Data

Meanwhile, Figure 11 depicts how adherence to Islamic principles and excellent service quality assurance can result in a positive customer sentiment. Product innovation and good promotion have the potential to surpass customer’s expectations. Banks must conduct frequent sentiment evaluations to enhance customer loyalty. Likewise, through these digital platforms, Islamic digital banking can provide

educational resources and financial literacy tools to empower users and promote responsible financial management based on sharia principles.

A positive sentiment shift is evident among customers towards Islamic finance, as evidenced by the growing interest in and adoption of Islamic digital banking services. This is driven by factors like the large and growing Muslim population in the region, rising smartphone penetration, and government support for financial inclusion. The convenience and accessibility of digital platforms combined with sharia-compliant products are also attracting customers who previously lacked access to Islamic banking services.

However, there are also some other obstacles, competition from established conventional banks and FinTech players, as well as the need for improved financial literacy remain challenges. Issues with the functionality of apps usually lead to more serious challenges. When this problem is not resolved right away, customers may become less trusting of the bank's products and services, and in the worst-case scenario, their trust in Islamic banking products and services, in general, may also decline.

Based on the sentiment analysis results of this study, three primary areas of tailored need to be improved, technology infrastructure, sharia compliance, and service quality. These areas consistently showed up in customer comments. System errors, frequently mentioned by customers, are linked to underlying technology infrastructure problems. Sharia compliance has grown in importance for customers as Islamic digital banking is based on Islamic economic law. The banks must make sure that all of their offerings, including product labeling, branding, and advertising, are in line with sharia principles.

The quality of the services is another issue in the growth of Indonesian Islamic banks. Given that digital banking allows for unlimited time and location for operations, being prepared to handle complaints and provide solutions is essential. This situation has become an issue of concern in Islamic digital banking following trustworthy matters and Islamic values.

### ***Research Contribution***

The findings of this study led to some suggestions for regulators, *first*, provide regulations promoting creativity and aiding in expanding Islamic digital banking. This may entail setting up testing grounds for novel products and services and expediting the licensing and registration procedures for Islamic digital banks. According to (OJK, 2023a), a roadmap for the development and strengthening of Indonesian Islamic banking 2023-2027 was released in 2023, and acceleration of sharia banking digitization is one of the pillars of this plan. Although developing IT modules

by Islamic banking product requirements is a significant strategy that should be consistently applied, in technical terms, it is also essential to regulate server specification and other supporting technology infrastructures to avoid frequent error system disruptions.

*Second*, the implementation of Islamic law on Islamic digital banks should be encouraged to fully describe the features, risks, and sharia governance mechanisms of their products to foster transparency and sharia compliance. Users' confidence in the sector will grow because of this transparency. The management of Islamic digital banks should prioritize adopting advanced technology and adhering to sharia compliance when expanding their business because most users have complaints about those issues. OJK amended regulations for commercial banks' adoption of digital services through POJK Number 21 of 2023, however, it is imperative to release regulations for adopting sharia digital services for Islamic commercial banks, with a particular emphasis on sharia compliance concerns.

*Third*, customers continue to have issues with services, such as unsatisfactory call center or online customer service replies and transaction errors. Hence, banks ought to boost collaboration with other parties and provide better customer service, information, and promotion enhancement to strengthen transaction services like fintech, e-commerce, taxation, and start-ups. Thus, it is also necessary to encourage the public to become more financially literate, especially regarding digital banking and financial products that adhere to sharia. Collaborations with academic institutions, financial institutions, and non-governmental organizations can help achieve this.

## **Conclusion**

Islamic digital banks can significantly contribute to financial inclusion and shape the future of Islamic finance in Indonesia. By effectively leveraging technology, forming strategic partnerships, and addressing customer needs, these banks can play a pivotal role. To achieve sustainable growth, it is essential to strengthen technology infrastructure, ensure sharia compliance, and enhance service quality. The limitations of this study stem from the small number of Islamic digital banks it addressed. For future studies, we also propose a few areas to close the gap such as conducting in-depth studies examining the impact of regulatory frameworks on the growth and innovation of Indonesian Islamic digital banking and analyzing the role of financial literacy initiatives in promoting responsible financial decision-making within the context of Islamic digital banking. By continuing to explore these areas, we can gain a deeper understanding of the evolving sentiment toward Islamic digital banking and its potential to empower societies.

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