Extracting Public Opinion and Popularity of Islamic Bank in Indonesia: A Big Data of Social Media and Google Trends Approach

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Abstract. Indonesia, which has the largest Muslim population in the world, has the potential to lead the Sharia banking and Islamic finance sectors. Developing the ecosystem for the Islamic finance industry depends on boosting public awareness and securing strong support from stakeholders. Using a big data approach, we investigate public interest and opinion towards Islamic banking in Indonesia utilizing social media sentiment analysis and search engine popular query terms. We use Twitter and Google Trends data to examine Bank Syariah Indonesia and Bank Muamalat, the two largest Sharia banks in Indonesia. According to our findings, most public opinions—aside from neutral ones—were generally positive, with Aceh, Jakarta, and West Sumatra ranking among the top three regions with the most significant public interest. Our findings reiterate the importance of social media marketing and engagement for Islamic finance sectors. Therefore, industry players should maximize the opportunity to enhance more effective promotion and communication strategies toward their customers.

1 Introduction

Islamic banking, also known as sharia banking, is a financial system that follows Islamic principles, such as the prohibition of interest-based transactions and the requirement of profit and risk-sharing. Islamic finance has grown significantly in recent years, with some concentration in certain nations [1]. Indonesia, the world's most populous Muslim-majority country, has witnessed significant expansion in its Islamic banking business as well. The Islamic Financial Services Board (IFSB) estimates that overall Islamic finance assets in Indonesia reach $37.3 billion in 2020, with Islamic banking accounting for the bulk of the assets [2]. The Indonesian government has aggressively promoted Islamic finance, and the country's Financial Services Authority has set laws and standards for the growth and expansion of the business [1].

One reason fueling the rise of Islamic banking in Indonesia is the growing demand for sharia-compliant financial services among the country's Muslim population, which accounts for more than 85% of the overall population. Furthermore, the government's attempts to create Islamic finance have resulted in the establishment of new Islamic banking products, such as sukuk (Islamic bonds) and Islamic microfinance, which have supported the industry's growth [2].

Nevertheless, Islamic banking has become an increasingly important aspect of Indonesia's financial system, with its market share continuously expanding over the last decade. The government's backing for the business, together with significant demand for sharia-compliant financial products, implies that the rise of Islamic banking in Indonesia is expected to continue in the coming years [2].

In this study, we analyze social media posts and search engine queries related to Islamic banking, Bank Syariah Indonesia, and Bank Muamalat to identify patterns in public sentiment towards these topics, including positive or negative attitudes, concerns, and areas of interest. This information can be used to inform the development of marketing strategies, improve customer experience, and identify opportunities for growth in the Islamic banking sector.

We use the Twitter public API to collect relevant tweets and perform sentiment analysis on them. Twitter's developer platform provides resources and guidance on using Twitter data for academic research [3], and there are also helpful guides available online for acquiring and analyzing Twitter data [4]. With this data, we perform sentiment analysis to identify positive or negative sentiment towards Islamic banking and potentially identify trends in public opinion. We also utilize Google Trends data that are useful to explore search trends related to Islamic banking and related keywords, and how these trends have evolved over time. This could help to identify potential correlations between search trends and changes in public sentiment towards Islamic banking.

2 Literature Review

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2.1 Islamic Banking in Indonesia

Indonesia is ranked first in the 2019 Islamic Finance Countries Index (IFCI) [3]. IFCI is a rating of countries based on the condition of sharia financial industry in their respective countries, as well as their position as industry leaders on a national and worldwide scale. Although being rocked by the COVID-19 epidemic, Indonesia's Islamic banking industry has demonstrated excellent performance, high profitability, long-term development, and greater stability.

2.2 Bank Syariah Indonesia (BSI)

Bank Syariah Indonesia (BSI) is a state-owned corporation which was founded on February 1, 2021 by a merger between 3 existing sharia banks, namely Bank Syariah Mandiri, BNI Syariah, and BRI Syariah [4]. This merger merges the benefits of the three Islamic Banks so as to give a more complete service, a greater reach, and have a stronger capital capacity. Backed by synergies with parent corporations and government support through the Ministry of BUMN, Indonesian Sharia Banks are encouraged to be able to compete at the global level.

The official BSI account has been on Twitter since May 2010 as the official account of Bank BRISyariah, and it is envisaged that with this account, it would be possible to link direct conversations with their clients who are active on Twitter social media. In addition, this may be utilized as a step in improving BSI's good service by providing information and responding to complaints or inquiries from consumers.

2.3 Bank Muamalat Indonesia (BMI)

Bank Muamalat Indonesia is Indonesia's first commercial bank to operate in accordance with Islamic Sharia principles [5]. The Indonesian Ulema Council (MUI), the Association of Indonesian Muslim Intellectuals (ICMI), and Muslim businesspeople came up with the proposal of creating BMI, which was later supported by the Government of the Republic of Indonesia.

It began operations in 1992, with the help of Muslim intellectuals and businesses, as well as the larger community [5]. It became a foreign exchange bank in 1994. Current finance products employ the Wadiah (entrusted) and Mudharabah concepts (profit-sharing). Whereas the concepts of buying and selling, sharing, and renting are used in the investing of funds. Bank Muamalat has been officially active on Twitter since May 2010.

2.4 Public Opinion and Popularity

Public opinion is a naturally occurring outcome of social interaction [14,15]. Dong and Lian (2021) investigate the challenges in gaining a comprehensive understanding of public opinion on any particular events, brands, and issues [14]. Policymakers have always been interested in public opinion regarding events because they are seen as crucial evidence in making and revising choices [16,17]. Recently, social media platforms offer a fresh method for expressing and tracking public opinion. Gorodnichenko et al (2021) highlights the diffusion of social media information could bring high-impact to public perceptions [16].

On the other hand, the popularity of any particular brands are widely known to have a positive correlation with consumers search behavior [18, 19]. Consumers instinctively participate in information-seeking activity, which nowadays frequently entails web searches [20]. Product purchasing in online activities is frequently the result of customer searches through search engines [20, 21].

2.5 Social Media

Social media is defined as the internet platforms that enable any individuals in activities of creation, engagement, and sharing through online social networking [22-24]. Social media brings advantages by opening up new opportunities for interaction and connection maintenance with friends, families, and acquaintances [22]. Social media also enables communication with many new forms of digital friends. Social media influencers, who are frequently seen by their followers as close friends or even members of their families [23].

Similar behavior on social media influencer to brands, which may arouse strong self-brand relationships or even sentiments of affection in committed people, are examples of these new sorts of relationship partners [24,25]. Malarvizhi, et al (2022) discuss the effectiveness of marketing strategies, communication activities and engagement in social media towards customer behavior and loyalty [23]. Due to their frequent fascination with prominent brands, youngsters may be more susceptible to this impact. The use of social media for discussing and marketing new or current products or services has seen tremendous increase in the past few years considering its importance in influencing customer purchasing behavior.

2.6 Twitter Platform for Islamic Banking Social Media Engagement

Social media platform, especially Twitter, provides rich information to measure the performance of Islamic bank from the perspective of user opinion and popularity [25-27]. Cahyono, et al. in 2017-2018 study the dynamics of Islamic banking by examining how Twitter users, in particular, perceive Indonesian Islamic banks' attempts at social media marketing [25]. The 7P marketing mix of product, place, price, promotion, process, people, and physical environment is used to evaluate social media users' impressions in Islamic bank dynamics [25]. Further, understanding the institutional branding and promotion of Islamic banks in Saudi Arabia is made easier by Alotaibi who discusses the influence of the social media platform Twitter [26].

The recent literatures are mostly limited in terms of comprehensive evaluation of public opinion on both
Twitter sentiment and Google Trends popularity, especially on the largest Islamic bank in Indonesia, BSI and its competitor, BMI.

3 Methodology and Materials

3.1 Research Methods

The current study employs a descriptive quantitative technique, which relies on numerical calculations to describe any indications, and sentiment analysis. The analysis was carried out for two reasons in order to capture the perception and popularity of Islamic banks in Indonesia: (1) Extracting public opinion on BSI and BMI using social media Twitter. (2) Obtain an overview of BSI and BMI search popularity trends based on the Google search engine.

3.2 Data Collection

Web scraping is used to obtain Twitter tweet data related to BSI and BMI. R software is used to scrap and extract those information using ‘twitteR’ and ‘gtrendR’ libraries. Web scraping is the technique of obtaining specific data from websites [6-8], in this example, user tweets related to specific keyword of @bankbsi_id and @BankMuamalat the official account of both BSI and BMI. The application programming interface (API) key, API secret, access token, and access secret are required for Twitter API access and were acquired via the official Twitter Developer free account.

Google Trends data collection on BSI and BMI uses the keywords "Bank Syariah Indonesia" and "Bank Muamalat" from the foundation of BSI on 1 January 2021 to 30 March 2023 in Indonesia. In addition, Google Trends of BMI data are also available and obtained since 2004.

3.3 Data Preprocessing

Twitter user tweets are generally informal and unclean, hence data preprocessing is required to clean up the data obtained from unnecessary characters [9,10]. Then an analysis is carried out to find out which tweets are popular based on the number of retweets and favorites. To get this insight, organic tweets are retrieved, namely tweets that are not the result of retweets or replies to other tweets.

Meanwhile, to categorize the sentiments of users, it is necessary to carry out 3 additional preprocessing stages, namely stemming, tokenization, and stopword removal [11,12]. Stemming is done to change each word to its basic word form. Tokenization is done to break sentences into words. Stopword removal is done to remove conjunctions that don’t contribute to the sentiment of the sentence as a whole, for example: in, to, from, which.

4 Results

4.1 Analysis of Public Opinion on Islamic Banks using Twitter Data

We will conduct an analysis to extract the following informations: most popular terms that are often mentioned in tweets, the ratio of tweets related to Islamic banks in Indonesia by type (organic, retweet, reply), and general public sentiment regarding Islamic banks in Indonesia. In addition, we also extract most popular tweets related to Islamic banks in Indonesia (especially BSI and BMI) in the society and the temporal pattern of many tweets related to Islamic banks in Indonesia according to the time.

Firstly, we extract the most popular terms that are often mentioned in tweets and public opinion regarding Islamic banks in Indonesia. Figure 1 shows the comparison of the most popular terms in Word Cloud visualization, especially regarding BSI and BMI as two largest Indonesian Islamic banks in Twitter. The larger the size of a word in the Word Cloud, the more frequently and popular it appears in the conversation. Both banks have their brand names as the most popular terms, while BSI also includes the colloquial references to its Twitter customer service (CS) administrator, i.e. “kak”, and “min”. This shows a more relaxed and closer relationship between customers and the CS administrator in BSI compared to BMI.

Fig. 1. Comparison of most popular terms regarding BSI and BMI in Twitter
In measuring the main actor of conversation regarding specific topic, we can compare the ratio of organic tweet, tweet produced by human originally started a conversation, as well as the replies and retweets regarding such topic. Figure 2 illustrates the comparison of ratio of tweet types regarding BSI and BMI in Twitter. Both banks shows similar characteristics in terms of the domination of replies to the conversation, even though in BMI, organic tweets (9.12%) contributes double than that of BSI (4.21%).

![Tweet types related to BSI](image1)

![Tweet types related to BMI](image2)

**Fig. 2.** Comparison of ratio of tweet types regarding BSI and BMI in Twitter

With this data, we perform sentiment analysis to identify positive or negative sentiment towards Islamic banking, especially on BSI and BMI. Based on the terms that make up each tweet, this analysis was done to assess the trend of tweets (positive or negative). Positively correlated terms will receive a score of +1, whereas negatively correlated words will receive a score of -1.

Figure 3 illustrates the comparison of sentiment types regarding BSI and BMI in Twitter. From the figure it can be seen that most of the tweets on both banks are neutral tweets. However, BSI is superior to BMI in that the percentage of positive tweets about BSI is greater than the negative tweets. Meanwhile, for BMI, there were almost as many negative sentiments as positive sentiments.

![Tweet sentiments related to BSI](image3)

![Tweet sentiments related to BMI](image4)

**Fig. 3.** Comparison of ratio of tweet sentiments regarding BSI and BMI in Twitter

If we further analyze the popularity traffic of both BSI and BMI, we could find out that there is a difference in the popularity driver. As shown in Figure 4, it can be seen that most of BSI’s tweets appeared on February 11, 2023 which coincided with the time the president launched the Digital Farmer’s Card and BSI’s people’s business credit in Aceh Province. While the most popular BMI tweets were found on March 30 2023, which coincided with the Ramadhan Month promo which was given specifically to Bank Muamalat customers. BSI popularity traffic is seen to be driven by the public figure action, while BMI traffic is driven by the direct marketing promotion.

![Tweet popularity traffic of BSI](image5)
4.2 Analysis of Popularity Trends on Islamic Banks in Indonesia using Google Trends Data

In this part, we first examine how searches for banks (keyword: bank) are distributed globally. We create a choropleth map to depict the distribution of searches for each nation in the world, and it reveals that Indonesia has moderately common searches for "bank" that are close to the global average (neither high nor low) as shown in Figure 5.

Fig. 5. Mapping of global popularity trends for bank

We further analyze the overview of Islamic Bank in Indonesia (BSI and BMI) search popularity trends based on the Google search engine. Subsequently, we try to analyze what queries are related to Bank Syariah Indonesia (BSI) and Bank Muamalat Indonesia (BMI) in Google Trends as shown in Figure 6 where BSI seems to dominate the general queries of Islamic or sharia banks in Indonesia.

Fig. 6. Comparison of most related Google queries regarding BSI and BMI in Google Trends

If we analyze the historical popularity trends of both banks, from the BSI plot in Figure 7, it can be seen that the highest searches occurred on January 31 2021 ahead of the inauguration of Bank Syariah Indonesia. In general, search trends tend to decrease. However, at certain times the search has increased.

Fig. 7. Historical popularity trends of BSI from 2021 to 2023

For example, on May 30, 2021, searches have increased because of the issue that Bank Syariah Indonesia is 'expensive'. This issue was reported by an Islamic scholar of Ustadz Yusuf Mansur and criticism made by other public figure named Jusuf Hamka. A peaceout then occurred in early August 2021 which led to a hike back. The results of this analysis indicate that Google's search trend for Bank Syariah Indonesia is quite sensitive to existing issues.
While, in BMI, it can be seen that since 2004, the search trend for the keyword Bank Muamalat has tended to decline in Indonesia. From Figure 8, it can be seen that the highest searches occurred on March 21, 2021, May 30, 2021, and June 12, 2022. May 30, 2021 is the closing date for job vacancies at Bank Muamalat. This shows that job vacancies can increase the search popularity.

With a far higher and more equally dispersed number of branch offices across Indonesia, BSI enjoys an advantage over BMI. In the provinces of Aceh, Jakarta, and West Sumatra, BSI is extremely well-liked. This is inline with the Qanun Regulation Number 11 of 2018 regarding Islamic financial institutions to permit only Islamic Financial Institution in Aceh [13]. It can be observed from the graph in Figure 9 that general information about Bank Syariah Indonesia is often searched for in each province. Searching for the location of the closest bank in DKI Jakarta is distinctive in its own right.

Our findings suggest that generally aside from neutral responses, most public sentiments were positive where Aceh, Jakarta, and West Sumatera were among the top three regions with the highest public interest. Our results confirm the value of social media participation and marketing for Islamic financial industries. Consequently, players in the industry should make the most of the chance to improve stronger customer interactions and marketing techniques.

It must be highlighted that there exist some limitations of our work which creates room for improvement in future research. First, the sample of tweets used in this study is still limited by the legally free account of the Twitter developer up to 1,500 tweets.

5 Conclusions

As a country with the largest Muslim population in the world, Indonesia has the potential to be at the forefront of the Islamic finance industry, including sharia banking. Increasing public awareness and gaining strong support from stakeholders are fundamentally required to develop the Islamic finance industry ecosystem. In this study, we investigate public interest and opinion towards Islamic banking in Indonesia using the big data approach of social media sentiment analysis and search engine popular query terms. We focus on taking Bank Syariah Indonesia (BSI) and Bank Muamalat Indonesia (BMI), two of Indonesian largest sharia banks as our case study and utilizing Twitter and Google Trends data.
per month. A more comprehensive number of samples with enterprise commercial accounts could bring more benefit in capturing public opinion. Second, the marketing and communication channels of Islamic banks are still limited to Google search engines and Twitter social media. Further elaboration on other channels such as Instagram, Facebook, Youtube, TikTok, etc is worth investigating in future works.

References