PUBLIC PERCEPTION OF AMIL ZAKAT INSTITUTIONS IN INDONESIA: INSIGHT DISCOVERY FROM MACHINE LEARNING

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ABSTRACT

This study aims to identify the most popular topics and words in conversations on Twitter with the topic of Amil Zakat in Indonesia. This research also aims to identify the sentiments and emotions of netizens about the Amil Zakat in Indonesia. This study uses a qualitative method with a sentiment analysis approach with the help of Orange Data Mining. The data used are tweets from Twitter taken from 16 to 23 April 2023. Researchers used the keywords "Amil Zakat" "Lembaga Zakat" and "Lembaga Amil Zakat" to get a total of 1,000 tweets. The results of the study show that the words "Zakat" "Badan" and "Nasional" are the three words that appear most often in discussions of Amil Zakat institutions on Twitter. These three words refer to the BAZNAS, where based on the metadata processed in this study, many people, individuals, and institutions distribute their zakat through BAZNAS. Overall, Twitter is dominated by tweets with neutral sentiments, shown by happy emotions, as much as 93.51% of the total tweets. Amil Zakat can increase the intensity of communication through social media especially regarding solicitations for the community, as well as achieving the collection and distribution of zakat funds as a form of information disclosure to the public.

INTRODUCTION

Poverty, income inequality and financial inclusion are still major issues in national development in Indonesia (Ayuniyyah et al., 2022; Erlando et al., 2020; Timur & Herianingrum, 2022). Data from Badan Pusat Statistik,(2023) noted that the number of people still in the poor category in Indonesia in September 2022 reached 26.36 million people, or 9.57% of the total population in Indonesia. Meanwhile, the financial inclusion index issued by the Otoritas Jasa Keuangan, (2022) shows a value of 85.10%, where there is still a gap of 4.04% between the financial literacy index in rural and urban areas. Financial inclusion is essential in increasing economic growth and reducing poverty because it can provide business actors with capital to carry out production activities (Araminta et al., 2022; Dawood et al., 2019; Erlando et al., 2020). Islamic philanthropy can be one of the efforts to assist the government as an accelerator in economic growth because it can reach people experiencing poverty through its role.

Zakat is a form of Islamic philanthropy that has an important role as a means of income distribution so that the poverty rate can be reduced, especially for Muslim people (Arifin & Anwar, 2021; Hudaefi, Caraka, et al., 2022; Sulaeman et al., 2021). Zakat is also able to increase people's purchasing power so that it will indirectly increase the aggregate demand that occurs in an area (Sulaeman et al., 2021). As one of the pillars of Islam, empowering zakat can be a way to overcome social problems (Ayuniyyah et al., 2022). One of them is by developing a sustainable zakat empowerment program so that the zakat received by mustahiq can grow so that mustahiq can get out of the cycle of poverty (Bilo & Machado, 2020; Widiastuti, Auwalin, et al., 2021). Zakat can be given in the form of productive zakat or business capital, which is used to develop the business of the zakat recipient (Arifin & Anwar, 2021).

For this reason, it is necessary to have a professional institution that can act as a mediation facility for muzakki who wish to give zakat and mustahiq as recipients of zakat funds (Widiastuti et al., 2021). In Indonesia, based on Law Number 23 of 2011 concerning the management of zakat, the collection and distribution of zakat funds are carried out by BAZNAS or the Badan Amil Zakat Nasional, assisted by LAZ or Lembaga Amil Zakat. Amil Zakat must also have managerial skills (Ridwan et al., 2019). For example, they were training and forming a companion team so that the zakat funds used for mustahiq economic empowerment programs could be used according to their goals (Herianingrum et al., 2022). In addition, the amil zakat institution has a duty so that the zakat that has been collected can be distributed at the right time and distributed to mustahiq according to the criteria (Anwar, 2016; Nasri et al., 2019).

On the other side, zakat fund collection in 2020 is IDR 12 trillion, with a national zakat fund distribution value of IDR 11 trillion (Puskas BAZNAS, 2022). With such a large

total managed fund for zakat, accountability is fundamental to avoiding misuse of zakat (Purbasari et al., 2018). However, misusing zakat can reduce the level of trust of zakat donors in amil institutions (Abdullah et al., 2023; Mira et al., 2020). Likewise, the credibility of an institution such as an amil zakat institution can affect Muzakki's intentions in paying zakat (Lutfi et al., 2023; Nurillah et al., 2021; Ratnasari et al., 2023). Sentiment from the public regarding amil zakat can partially measure how the community responds to performance and what has been done by amil zakat institutions in Indonesia so far. Negative sentiment can directly affect the trust and credibility of zakat donors and vice versa (Bigne et al., 2023; Faza et al., 2022).

This study aims to identify public sentiment about amil zakat in Indonesia through metadata in the form of tweets on social media Twitter. Several previous studies have made zakat an object of research by using tweet metadata on Twitter. For example, Hudaefi, (2021) measures community zakat sentiment through big data originating from tweets on Twitter. Redjeki & Widyarto, (2022) identify public opinion about implementing zakat in Indonesia through big data originating from tweets on Twitter. Timur et al., (2023) tried to identify how people in Indonesia perceive the management of social funds in the form of waqf. Hudaefi et al., (2022) analyzed the knowledge related to the zakat administration during the COVID-19 pandemic using a text-mining approach. Something similar was done in the research of Hudaefi, Hassan, et al.,(2022) which also examined perceptions of zakat administration but used a text mining approach derived from Youtube and Zoom. Some other studies, such as Assalafiyah & Rusydiana, (2023) aim to measure sentiment about zakat but use sources derived from secondary data such as reputable scientific journals. At the same time, Hamid et al., (2022) tried to measure public satisfaction regarding zakat with a sentiment analysis approach. On the other hand, this research has a fundamental difference in terms of the object used, where this research will focus more on measuring sentiment and perception in zakat fund management organizations or amil zakat institutions. The researcher views measuring public sentiment towards zakat management institutions is very important because it is related to public trust in channeling some of their wealth to the eight asnaf through zakat fund management institutions.

Amil and zakat institutions have a vital role in collecting and distributing zakat. This research will be the first to try to identify public sentiment on the performance of amil zakat institutions in Indonesia through metadata derived from tweets on Twitter using machine learning. Researchers use Twitter as a source of information and metadata in this study because, on Twitter, information can be disseminated quickly and in real-time through tweets, retweets, or including a link (Asmat et al., 2022). In addition, the characteristics of tweets on Twitter, which are limited to a maximum of 280 characters, make Twitter a social media whose content tends to be more focused on a topic to be

discussed. Researchers use sentiment data from netizens in Indonesia because Indonesia is a country whose population is an active user of Twitter social media as many as 24 million people (Wearesocial, 2022). Therefore, by using data from Indonesia, it is hoped that the data collected will have a large enough nominal amount. The results of this study can complement the results of previous research using a different approach so that it will add to the body of knowledge regarding amil and zakat institutions. This research will provide social implications, especially for amil zakat institutions, in measuring the sentiment or opinion of the community regarding amil zakat institutions in Indonesia.

LITERATURE REVIEW
Zakat

Zakat, according to language, can be interpreted in several words, namely growth, holy, and commendable (Qardhawi, 2000). Zakat is one of the obligations that must be fulfilled by a Muslim when he has reached nisab (the minimum requirement for assets that can be categorized as obligatory zakat) and haul (the period of ownership of assets has passed for 12 Qamariyah months / Hijri year) (Bin-Nashwan, 2022; Salleh et al., 2019). Zakat is also unique because it has eight groups (Asnaf) entitled to receive a distribution of zakat funds (BAZNAS, 2022). The eight groups are fakir, miskin, fisabilillah, gharimin, riqab, converts, amil, and ibnu sabbil (Hudaefi, 2021). Zakat has a role in providing social protection by alleviating poverty through zakat empowerment through various programs and activities that can be carried out by amil zakat so that the empowerment of zakat funds can be sustainable (International Policy Centre for Inclusive Growth, 2018; Widiastuti, Auwalin, et al., 2021).

Sometimes, zakat can also help victims affected by natural disasters (Arifin & Anwar, 2021). The COVID-19 pandemic that hit the world in 2020 is also an example of a particular case where these conditions significantly affect health and public health conditions, especially in Indonesia. Zakat can play a role in being distributed to mustahiq who need medical assistance and economic recovery because they have been affected by the declining economic conditions in Indonesia, which have caused many layoffs (Ascarya, 2021). Zakat can also be given as business capital to recipients by mustahiq who do not have a business so that the Zakat funds can be used to start a business (Mawardi et al., 2022). Alternatively, zakat funds can also be given to mustahiq, who already have a business. However, the business is affected by a disaster or certain economic conditions, so the business is challenging to develop. The business capital can be used to expand their business so that later recipients of zakat funds can improve their economic conditions.

The Role of Amil Zakat Institutions

The amil zakat institution is not only tasked with collecting and distributing it, but amil zakat can also utilize zakat funds in the form of activities or programs so that the distributed zakat funds can be sustainable (Widiastuti, et al., 2021). A professional zakat amil must also be able to make the process and activities of collecting and distributing zakat more efficient and effective. BAZNAS (Amil Zakat National Agency), for example, has a program that targets individuals and community mustahiq by developing the potential and advantages of the areas where mustahiq live (Fadilah et al., 2021). BAZNAS volunteers are placed in each region to supervise, initiate, develop, and evaluate programs run by residents.

In this digital era, amil zakat is required to collaborate and innovate in digital transformation (Izza & Rusydiana, 2022; Widiastuti, et al., 2021). Digitalization of zakat can also be applied to institutional administration and accounting systems so that amil zakat institutions provide an integrated and transparent system so that muzakki's trust in channeling zakat through amil zakat institutions can increase (S. K. Firdaus et al., 2016; Kamaruddin et al., 2023). Collaboration can also be carried out with other agencies in Indonesia's zakat ecosystem, such as fintech institutions, marketplaces, educational institutions, entrepreneurs, and the government (Anwar, 2016; Timur, 2022). Payment of zakat through digital applications can increase muzakki's desire to pay zakat because muzakki considers that using digital applications will make it easier and shorten the time (Bin-Nashwan, 2022; Hadi et al., 2021; Suzianti et al., 2020). However, on the other hand, amil zakat institutions must be able to create an easy-to-understand application system with clear directions for use, acceptable decision results, and the zakat recipient determination process (Kurniawan et al., 2022).

Sentiment Analysis in Islamic Philanthropy

Sentiment analysis is an analytical technique based on text categorization that analyzes the author's thoughts, sentiments, and emotions on a given topic by processing language, processing linguistics, and text mining data (Mailoa, 2021). Data in the form of words is needed for sentiment analysis, which will then filter and identify the sentiments as output. An expression or sensation of Joy, Surprise, Sadness, Fear, Disguise, or Anger will result from the word or sentence that has been analyzed. Text mining can be performed using a number of tools, such as "R," "NVivo," "Orange Data Mining," "KNIME," "Weka," "RapidMiner," "Python," and others (Hassan et al., 2022).

In Islamic philanthropy, community sentiment or a response regarding the performance of amil zakat is essential for realizing the relationship between mustahiq as a zakat giver and amil zakat as muzakki (Abdullah et al., 2023). Ahmad & Rusdianto, (2020) explain that amil zakat institutions that are considered by the community to apply

transparent and accountable principles will be considered to have high professionalism. These two things directly affect people's trust and intentions to pay zakat (Ahmad & Rusdianto, 2018; Nasri et al., 2019; Nurillah et al., 2022). Muzakki, who have channeled their zakat through amil zakat, will intend to distribute their zakat again, leading to sustainable donations. Meanwhile, people who have reached the required nisab and haul will be encouraged to participate in starting to pay zakat through amil zakat institutions.

Knowledge Gap

Space for scientific exploration exists in the unstructured data produced on media social platforms like Twitter. Machine learning, such as Orange Data Mining, allows researchers to perform analysis, classification, and categorization activities on such unstructured data (Nanath & Joy, 2023). Hudaefi, (2021) evaluates the sentiment score of data tweets containing the hashtag '#zakat' to investigate netizens' perceptions on zakat during the Covid-19 pandemic. Timur et al., (2023) tried to identify the most popular topics and words in cyberspace conversations and to determine how netizens feel about E-Money using Machine Learning. Timur et al., (2023) tried to identify the sentiments and emotions of Indonesian netizens regarding waqf. On the other side, Hassan et al., (2022) tried to investigate the opinions of netizens on cryptocurrencies using machine learning, emotion theory, and lexicon sentiment analysis.

Big data analysis research on the issue of an institution or organization, such as amil zakat, is still quite limited. Some studies based on netnography, such as Hudaefi, (2021), and Timur et al., (2023) identifying Islamic social fund products such as zakat and waqf. Meanwhile Timur et al., (2023) and Hassan et al., (2022) focuses on e-money and cryptocurrency financial products. This study is motivated by the scarcity of scientific publications, in which data from Twitter is examined using a text mining approach to discover useful and usable knowledge about amil zakat institutions.

Tweets With Most Likes, Retweets and Research Questions

Public behavior in cyberspace, such as liking and retweeting content, gives an idea of the size of a content's popularity and ability to spread (Lahuerta-Otero et al., 2018). Usually, netizens who retweet content have a high probability of liking and having special emotions about the topic brought by the content (S. N. Firdaus et al., 2021). The higher the number of likes and retweets a piece of content has, the more favorable it is and the more netizens want others to know about it. On the basis of these functions of most likes and retweets, this research seeks to answer the following :

RQ1: What topics are most liked and most retweeted by netizens on Twitter related to Amil Zakat Institutions?

Word Cloud, Topic Modelling Visualization and Research Questions

Word frequency and topic modelling can be represented as a holistic visual in a word cloud to illustrate data's most frequently occurring words (Alqtati et al., 2022). ord cloud and topic modeling are useful for researchers to perform data analysis and data network interpretation (Hudaefi, Hassan, et al., 2022). Some previous studies have used word cloud visualization and topic modeling to classify and cluster data in the form of words or topics that are the main focus of a data set. For example, in the research of Sima et al., (2022), Alqtati et al., (2022), Hudaefi, (2021), Timur et al., (2023), and Timur et al., (2023). With word clouds and topic modelling as a framework, the following research question (RQ4) is attempted to be addressed:

RQ2: What words and topics are most discussed by netizens on Twitter related to Amil Zakat Institutions?

Sentiment Analysis and Research Question

Sentiment analysis helps know the public's mood related to specific topics (Alqtati et al., 2022). In addition, sentiment analysis is usually used to determine public perception or objectivity about events or problems amid society (Khotimah, 2022). The sentiment generated depends on annotating and labeling the data samples used. Labeling will be given to a group of data with negative, neutral, or positive labels based on sentiment scores (Asmat et al., 2022). Some previous studies, such as Hamid et al., (2022), Timur et al., (2023), and Hudaefi, (2021) used sentiment analysis to measure people's perceptions of Islamic social donations. Based on this background, the questions to be answered by this research are:

RQ3: What are the sentiments of netizens on Twitter regarding the role and performance of the Amil Zakat institution?

Data Emotion and Research Question

Human emotions are notoriously difficult to categorize. Sentiment analysis attempts to provide information about emotions that accurately characterize the author's intent in a text message (Marcu & Danubianu, 2020). Emotions that can be classified by Orane Data Mining include Joy, Surprise, Fear, Anger, Disgust, and Sadness. Some previous research such as Timur et al., (2023), and Timur et al., (2023) menggunakan data emotion untuk mengidentifikasi emosi yang dirasakan oleh public terkait suatu topik. Based in this background, this paper aims to answer the following research question four:

RQ4: What are the majority of emotion types on Twitter related to Amil Zakat Institutions?

RESEARCH METHODS

This study employs a sentiment analysis approach using a qualitative methodology and the Orange Data Mining program as a tool. This study is a qualitative investigation in nature because it characterizes and identifies a key phenomenon with unknown variables (Creswell, 2014; Hudaefi, Hassan, et al., 2022). The data is derived from tweets on Twitter's social media platform. This study is divided into three steps, the first of which is the crawling of Twitter for data. The second stage involves pre-processing, sentiment analysis, and visualization utilizing the Orange Data Mining tool and the Multilingual Sentiment technique. The third is the outcomes of the identification and visualization.

The Bioinformatics Lab at the University of Ljubljana, Slovenia, develop appropriate software for the Orange operating systems. Orange facilitates the construction of data analysis algorithms, the execution of statistical distributions, box plots, and scatter plots, as well as the execution of analyses with decision trees, hierarchical clustering, heatmaps, multidimensional scaling (MDS), and linear projections (Hudaefi, Hassan, et al., 2022). The open-source machine learning tool Orange Data Mining has features for data mining, identification, and analysis in a visual format (Mir et al., 2022). Python is the computer language used for orange data mining. Sentiment predictions for each document in the corpus or a collection of previously crawled documents can be obtained using sentiment analysis in Orange data mining. In order to forecast sentiment, lexical bases are used, which has benefits for flexibility (Trivedi & Singh, 2021).

Several types of metadata that can be processed by Orange Data Mining from Twitter are "Date and time of the post," "username," "tweet count," "likes count," "replies count," "retweet count," "mentions," "followers count," "language," "type of account," author status count," "author favourites count," " author friend count," " author followers count," "author listed count,". However, the Orange Data Mining program also has some drawbacks. For example, the metadata range that can be crawled is only the last seven days (Mir et al., 2022).

One of the most widely utilized social media sites is Twitter, which is used by the general population. Wear social, (2022) reveals that, with 31.2 million monthly visits, Twitter is Indonesians' second most popular social media site behind Facebook. 58.3% of Indonesians (16–64 years old) who use Twitter regularly are active users. From tweets written by its users, Twitter can offer free and original data and information (Mittal & Ahmed, 2021). Twitter is known for its tweets, which are brief messages with a word count

cap of 280 characters (Antonakaki et al., 2021). Tweets, retweets, comments, comment responses, number of likes, date tweet, author name, language, and author location are just a few sorts of metadata that can be found in the Twitter data crawl process results. Because Twitter's text data is more structured, it is easier for analysts to make strategic decisions using it for data analysis (Chan et al., 2015; Sarmast et al., 2023).

Crawling the website https://developer.twitter.com/ on April 12, 2023, employs the Twitter Application Programming Interface (API) to retrieve metadata sources coming from tweets on Twitter from April 5, 2023, through April 12, 2023. This study focuses on internet users in Indonesia, where Indonesian is the most widely spoken language. As a result, the three keywords employed in this study are a combination of research objects that also use Indonesian and have an absorption language of English. "Amil Zakat," "Lembaga Zakat (In English: Zakat Institution)," and "Lembaga Amil Zakat" (In English: Amil Zakat Institution) are the three keys that are used. The total tweet data obtained and processed in this study are 1.000 tweets in Indonesian and original.
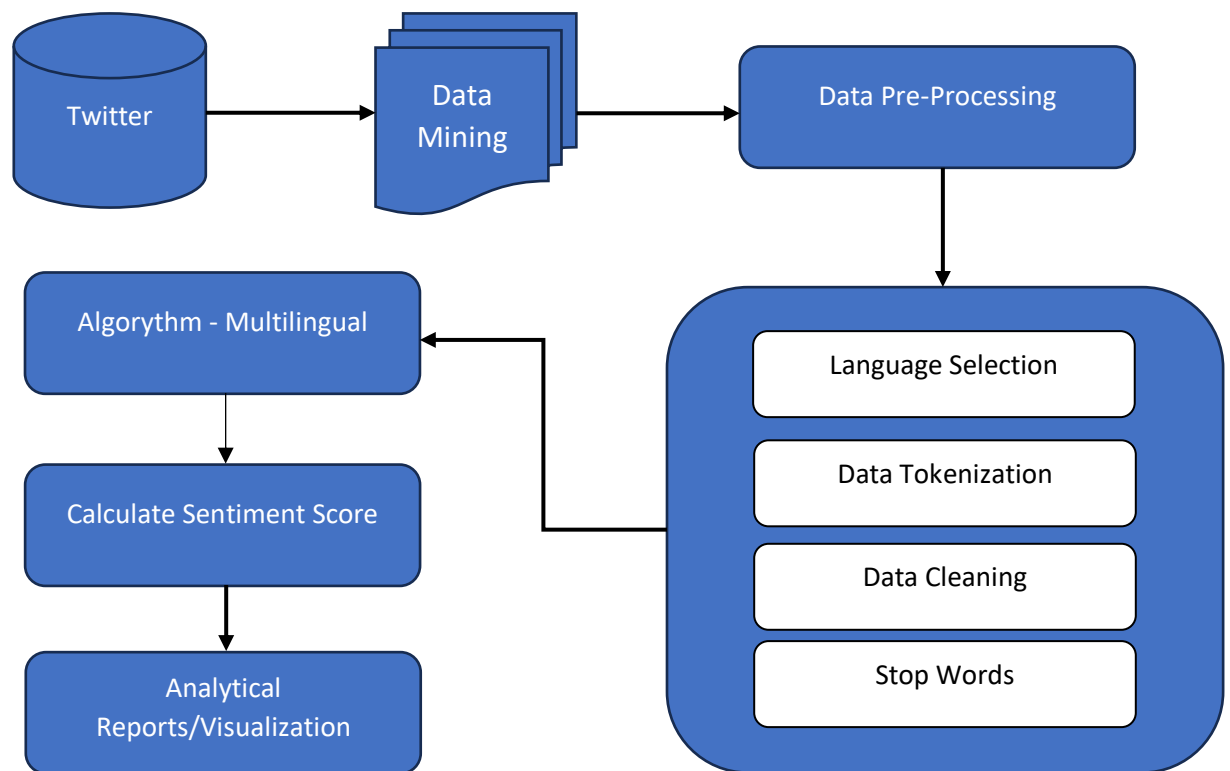
Source: Prepared by Researcher

Figure 1. Flowchart on Orange Data Mining
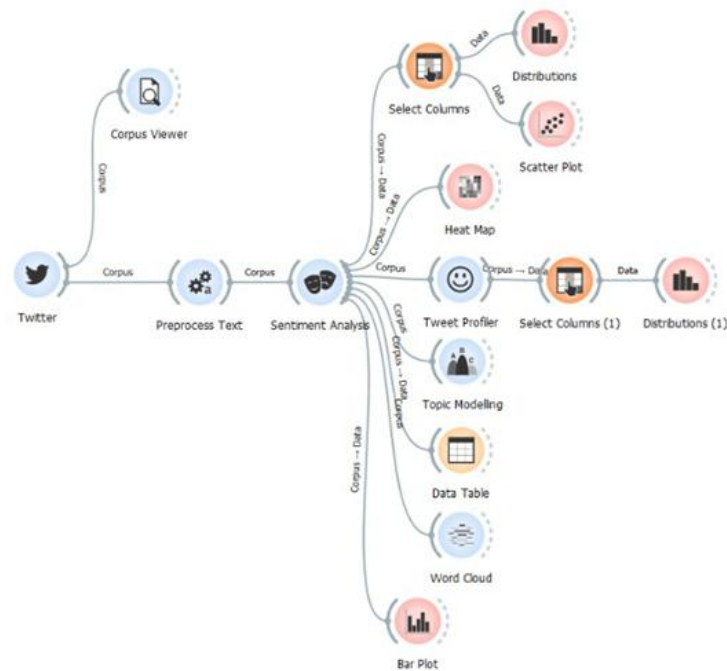
Source: Processed by Orange Data Mining

Figure 2. Widget Structure by Orange Data Mining

Three steps were taken during the pre-processing stage to remove tweet content that wasn't related to the study, resulting in cleaner crawler data results. The researcher uses the "Lowercase" function to lowercase every letter in the tweet sentence, the "Remove Accents" function to get rid of accents or language that has no bearing on the study, and the "Purse HTML" function to get rid of tweets that are in the form of HTML or URLs. Tokenization is the second stage, when each word that makes up a tweet is separated so that machine learning can analyze it more quickly. The final step is filtering out comments that are meaningless and unrelated to the desired keywords using Stopwords. Researchers employed the Multilingual Sentiment approach during the sentiment analysis phase. The only Lexicon language approach that can identify tweets or sentences in Indonesian, Multilingual Sentiment was selected. Three different types of dictionary files, which include words that describe a positive sentiment, general terms, and phrases that describe a negative sentiment, will be used to identify recognized data. Positive, neutral, and negative descriptions will be the output of sentiment weighting with Multilingual Sentiment.

RESULT AND ANALYSIS

Dialogue Data Text Mining Twitter

Table 1 shows the top five tweets from the crawling process metadata that have received the most likes and retweets. Table 1 displays the original Indonesian tweet text and its English translation. The number of likes and retweets was chosen to illustrate the association relationship between netizens and Amil Zakat institutions through social information (Jiao et al., 2022). The more likes and retweets of content, the greater the credibility of the content that the netizen wants to share (Liu & Tang, 2018).

Table 1
Tweets With Most Likes and Retweets

Content (Original)	Content (In English)	Number of Likes	Number of Retweet
"Satu-satunya Parpol Gandeng BAZNAS, PSI Mendorong Gerakan Sadar Zakat, Partai Solidaritas Indonesia (PSI) menggelar buka bersama dan sosialisasi Gerakan Sadar Zakat bersama para pengurus dan kader. Hadir pula sejumlah staf dari Badan Amil Zakat Nasional (BAZNAS)."	"The only political party partnering with BAZNAS, PSI, to encourage the Zakat Awareness Movement, the Indonesian Solidarity Party (PSI) held an iftar together and socialized the Zakat Awareness Movement with administrators and cadres. .Also present were many staff from the National Amil Zakat Agency (BAZNAS)"	71	31
"Pagi, Panitia amil zakat sudah memanggil-manggil buat bayar zakat, Kamu udah bayar zakat belum? "	"Morning, The amil zakat committee has called to pay zakat. Have you paid zakat yet?"	61	4
"Kanwil Kemenkumham Sumsel : Zakat Keluarga Besar Kemenkumham sebesar RP.1.453.917.072 Kepada Badan Amil Zakat Nasional."	"South Sumatra Kemenkumham Regional Office: Kemenkumham Large Family Zakat of IDR 1,453,917,072 To the National Amil Zakat Agency."	11	76
"Tunaikan kewajiban, Wamenkumham serahkan zakat fitrah sebesar 1,4 M ke Badan Amil Zakat."	"Fulfilling obligations, Wamenkumham handed over 1.4 billion zakat fitrah to the Amil Zakat Agency."	21	30
"Ketua Badan Amil Zakat Nasional, Noor Achmad MA mengucapkan terima kasih kepada ASN Kemenkumham yang sudah menunaikan kewajibannya membayar zakat fitrah melalui BAZNAS."	"The Chairperson of the National Amil Zakat Agency, Noor Achmad MA expressed his gratitude to the Kemenkumham ASN who had fulfilled their obligation to pay zakat fitrah through BAZNAS."	9	7

Source: Processed by Orange Data Mining

In Table 1. We can see that the tweet sentence with the most likes and retweets is a sentence that informs a joint activity between an organization/political party and BAZNAS (Amil Zakat National Agency) as an amil zakat institution. The event initiated by the two institutions is an example of collaboration between amil zakat institutions and

organizations that have a large mass of people to socialize the zakat awareness movement to the community, likewise for the tweets that have the third, fourth, and fifth number of likes and retweets which have the same pattern as the tweets discussed earlier. BAZNAS (Amil Zakat National Agency) also carries out a pattern of collaboration with the Ministry of Law and Human Rights Indonesia (Kemenkumham RI). In these two tweets, it is clear that the Ministry of Law and Human Rights is proactively inviting its employees to pay zakat fitrah through BAZNAS. This tweet has received considerable attention because if we look at the overall pattern of tweets from the 1,000 tweets used in this study, the researchers found many tweets affiliated with the Ministry of Law and Human Rights and BAZNAS.

Word Cloud Visualization

The research findings are displayed in the Word Cloud widget area as a visualization of a group of terms with a high intensity that are frequently used as themes in tweets about amil zakat. The word is used more frequently in the tweet, as indicated by the Word Cloud's higher word size.

Source: Processed by Orange Data Mining

Figure 3. Word Cloud Visualisation

Table 2
The Most Appearing Words in Tweet

Word (Original)	Word (In English)	The Word Count Appears In The Tweet
Zakat	Zakat	1462
Badan	Institution	873
Nasional	National	790
Baznas	Baznas (Amil Zakat National Agency)	642
Disalurkan	Distributed	462
Diterima	Received	270
Perolehan	Earning	243
Keluarga	Family	227
Fitrah	Fitrah (One type of Zakat)	226
Penyerahan	Delivery	151
Hukum	Law	138
Kementerian	Ministry	105
Pimpinan	Leader	92
Mengikuti	Follow	60
Hak	Rights	51
Kewajiban	Obligations	37
Masjid	Mosque	34
Bekerjasama	Cooperate	31
Ramadhan	Ramadhan	24
ASN	ASN (Civil Servant)	18

Source: Processed by Orange Data Mining

In Table 2. which contains information on a set of words that appear most often in the 1,000 tweets used in this study, we can see that the top four words that appear most frequently are an illustration that BAZNAS (Amil Zakat National Agency) as a National Amil Zakat Institution has the most intensity. Appears frequently on Twitter. The researcher also found that several words such as "disalurkan" (In English:distributed), "diterima" (In English:received), "perolehan" (In English:earning), "penyerahan" (In English:delivery) appear quite frequently in the analysis of this study because they are words that describe the process of collecting up to the distribution of zakat to mustahiq. An interesting thing can be found in the word "masjid" (In English:mosque) which appears 34 times in the tweet. The mosque is one of the places most often used as a reference for muzakki to distribute their zakat. The researcher also found that the word "Fitrah" (One type of Zakat), which is a type of zakat that must be paid during the month of Ramadan, is a word that appears quite often in the tweet analysis results in this study. Finally, the researcher again found several words affiliated with the Ministry of Law and Human Rights, such as "kementerian" (In English:ministry), "hukum" (In English:law), "pimpinan" (In English:leader), "ASN" (In English:Indonesia Civil Servant). That is, the leadership of an institution, through its policies, has an important role in inviting subordinates to obey in paying zakat through BAZNAS or other official amil zakat institutions.

Topic Modelling Visualisation

      The topic modeling visualization section's findings from Orange Data Mining's data processing revealed 10 topics that became the most talked-about subjects on Twitter. The results of the previous Word Cloud procedure, which also obtained data in the form of "Word" that commonly arises in Amil Zakat talks, are strengthened by this outcome. Some of the topic words that appear most often are "zakat", "badan" (in English:Institution), "nasional" (In English:National), "baznas", "disalurkan" (In English:Distributed), "diterima" (In English:Received), "fitrah" (Onte type of Zakat), "perolehan" (In English: Earning), "keluarga" (In English:Family), "penyerahan" (In English:Delivery). In addition, in the group of topics that often appear second are the words "zakat", "disalurkan" (In English:Delivery), "baznas", "fitrah" (One type of zakat), "perolehan" (In English:Earning), "diterima" (In English:Received), "nasional" (In English:National), "penyerahan" (In English:Delivery), "badan" (In English:Institution, "hukum" (In English:Law).

| Topic	Topic keywords
1	zakat, badan, nasional, baznas, disalurkan, diterima, fitrah, perolehan, keluarga, penyerahan
2	zakat, disalurkan, baznas, fitrah, perolehan, diterima, nasional, penyerahan, badan, hukum
3	hukum, kementerian, zakat, diterima, keluarga, penyerahan, perolehan, nasional, baznas, asasi
4	keluarga, diterima, perolehan, hukum, fitrah, kementerian, penyerahan, hak, asasi, zakat
5	pimpinan, nasional, baznas, badan, daring, acara, hukum, mengikuti, disalurkan, didampingi
6	fitrah, pengumpulan, provinsi, menggandeng, bekerjasama, kemenkuham, hukum, pegawai, badan, mengikuti
7	gresik, petrokimia, pegawai, baznas, bekerjasama, kemenkuham, menggandeng, pengumpulan, keluarga, disalurkan
8	baznas, penyerahan, keluarga, mengikuti, pegawai, diserahkan, disalurkan, hak, gresik, asasi
9	fitrah, gresik, petrokimia, badan, lembaga, baznas, tunaikan, serahkan, kegiatan, kewajiban
10	keluarga, baznas, penyerahan, fitrah, tunaikan, kewajiban, serahkan, diterima, gresik, badan

Figure 4. Top Modelling Visualisation

Source: Processed by Orange Data Mining

      Overall, the results of the topic modeling visualization in Figure 3 strengthen the results of the previous Word Cloud visualization, which has similarities in several topic keywords with words that often appear in tweets that discuss Amil Zakat, such as the words "baznas", "zakat", "badan" (In English:Institution), dan "nasional" (In English:National), which are words that describe BAZNAS as a National Amil Zakat agency. Then words such as "disalurkan" (In English:Distributed), "diterima" (In English:Received), "perolehan" (In English:Earning) and "penyerahan" (In English:Delivery) are the main activities in the collection of zakat. Several other words, such as "fitrah" are also the exact words found in the Word Cloud visualization where these words describe one of the types of zakat that many muzakki give. Finally, there is the word "keluarga" (In English:Family) which in this study is defined as a large family of several institutions that jointly pay zakat through BAZNAS.

Heat Map Visualisation

The two selected matrices' outputs are made accessible by the Heat Map widget as numerical data. To detect sentiment from the used twitter data, the value and color signify the strength of each attribute. According to the Heat Map numbers, the more positive the attitude of the tweet data group used was, the higher the number obtained or > 0.00. Conversely, the more negative the sentiment was generated, the lower the Heat Map value, or 0.00.
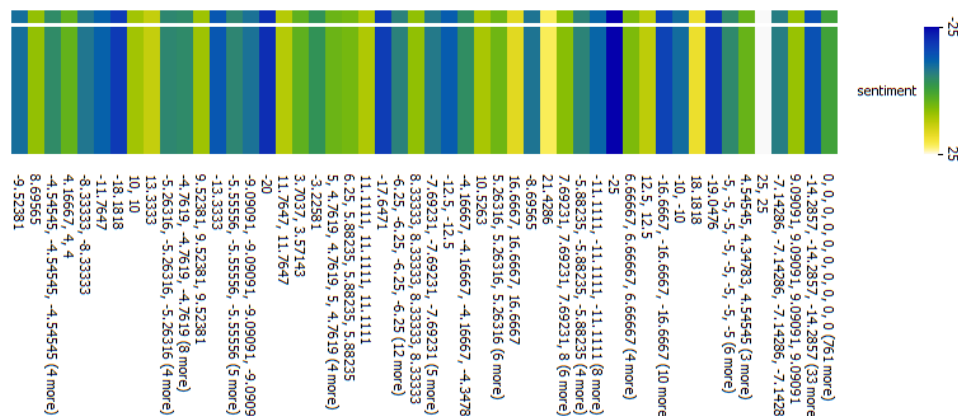
Source: Processed by Orange Data Mining

Figure 5. Heat Map Visualisation

The colors that appear on the Heat Map can also be used to determine the sentiment that the widget is displaying. Positive feelings are reflected by the hue yellowish-green, whereas bad feelings are reflected by the color bluish-green. The Heat Map visualization's findings demonstrate that the majority of the 1,000 tweets examined for this study had a favorable attitude. The Heat Map, which is dominated by yellowish-green color and shows that the emotion value obtained on average has a value of > 0.00, illustrates this.

Sentiments Polarity on Tweets Data

Sentiment Polarity visualization displays the total value of sentiment (compound), which will then be described into three types of sentiment, namely positive, neutral, and negative. If the sentiment value > 0.00, the sentiment from the tweet data used is positive. Conversely, if sentiment is <0.00, the tweet data has negative sentiment. Meanwhile, if the sentiment value is 0, then the tweet is considered to have a neutral sentiment. Furthermore, the results of calming sentiment will be depicted in a graph in Figure 5.

In Figure 5., we can see that tweets with neutral sentiment or a value of 0 dominated the sentiments generated from the 1,000 tweets in this study. In this study, there were 769 tweets with a total value of 0 or neutral. Most tweets with neutral sentiment are news-type tweets or inform Twitter users about activities carried out by

certain individuals or organizations. For example, the researcher tries to randomly take one tweet from tweets with positive, neutral, and negative sentiments in Table 3. In Table 3, examples of tweets with neutral sentiments contain information indicating the warden apparatus at the Ministry of Law and Human Rights Indonesia (Kemenkumham RI). Tweets that are news-type or inform something tend not to have any tendencies or sentiments (neutral sentiment).
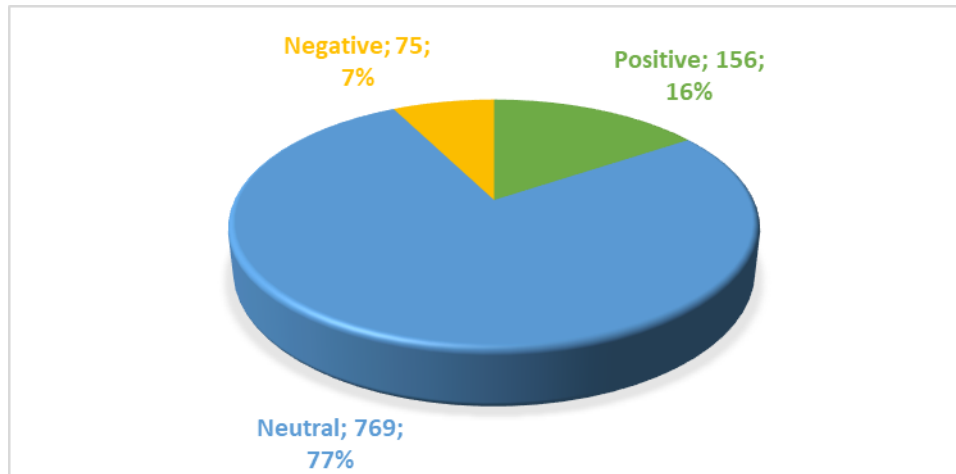
Source: Processed by Orange Data Mining

Figure 6. Sentiment Polarity Visualisation

In tweets that have positive sentiments, the tweet writer expresses his gratitude for being able to contribute by becoming an amil zakat officer in the area where he lives. Meanwhile, in tweets with negative sentiments, we can see that, literally, the tweeters are responding to objections to the taxes imposed by the government on the people. However, this has also had an impact on tweet writers who objected to the appeal for tax payments made by amil zakat officers

Table 3
Sample Tweet and Sentiment Shown

Content (Original)	Content (In English)	Sentiment Type
"Yang lain pada sibuk kue dan baju, Aku sibuk jadi amil zakat dan takjil aja di detik-detik Ramadhan berlalu. Dan Masya Allah rasanya nikmat sekali seperti diperhatikan terus sama Allah,dipeluk sama Rosulullah dan seluruh Malaikat."	"Other people are busy with cakes and clothes. I am busy being amil zakat and takjil just as Ramadan passes. And Masha Allah, it feels so good to be like being watched repeatedly by Allah, being hugged by the Prophet and all the Angels."	Positive
"Aparatur Sipil Kemenkumham menyalurkan total zakat fitrah dan shodaqohnya di tahun 2023 ini sebanyak Rp1.453.917.072,-. Perolehan	"Civil servants of the Ministry of Law and Human Rights distributed zakat fitrah and alms in 2023 of IDR 1,453,917,072. The proceeds received as of Monday,	Neutral

|		
yang diterima per Senin, 17 April 2023 Pukul 06.00 WIB ini akan disalurkan melalui Badan Amil Zakat Nasional (Baznas)"	April 17, 2023, at 06.00 WIB will be distributed through the National Amil Zakat Agency (Baznas)."	Source:
"Hidup di Indonesia, sudah dipajaki pemerintah, ditagih zakat pula sama amil zakat masjid yg keliling. Padahal, kerjaan dan penghasilan tetap gak punya, masih ngontrak petakan, udah ada tanggungan keluarga pula. Jatuhnya miskin, tapi zakat gak pernah dapat, BLT apalagi."	"Living in Indonesia, the government has already taxed it, zakat is also being collected from the amil zakat at the mosques that go around. In fact, I still don't have a job and income, I still rent a house, I already have a family to support me too. Fall poor, but never get zakat, BLT especially."	Negative

Processed by Orange Data Mining

Scatter Plot Visualisation

The results of Twitter's metadata assistance can be seen using the widget scatter plot as a series of randomly placed dots arranged in a certain way. In order to make it simpler for consumers to understand the outcomes of data processing, scatter plot data are utilized, which are based on the properties of the x-axis and y-axis with numerous color options and visuals. To establish the scatter plot distribution in this study based on the gathered sentiments, researchers used sentiment attributes on both axes. The scatter plot widget's visualization results demonstrate that the majority of the tweet data displays a bright green color with a sentiment rating ranging from 0 to 25. This indicates that the scatter plot results support the findings of the earlier visualization, which showed that public opinion in Indonesia is neutral toward the Amil Zakat institution.
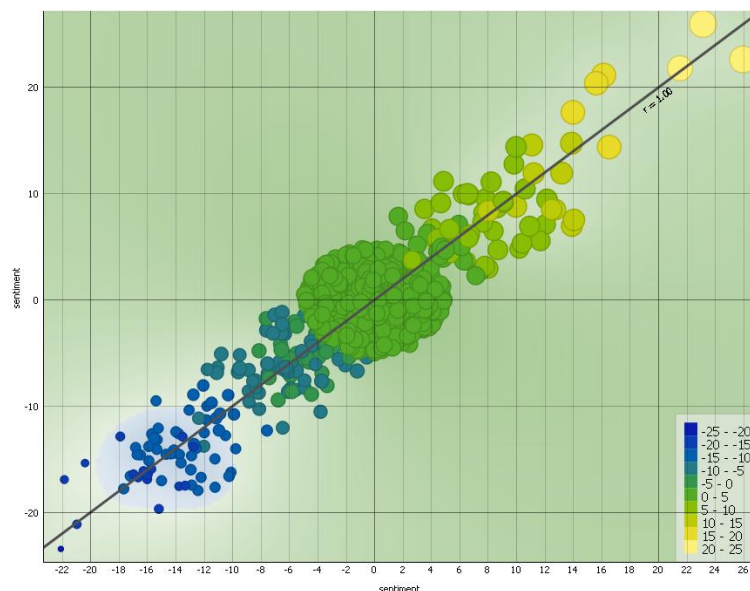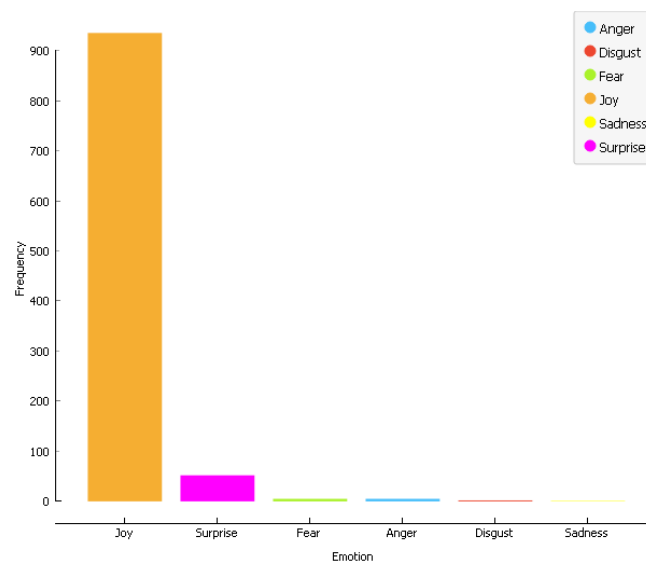

Source: Processed by Orange Data Mining

Figure 7. Scatter Plot Visualisation

Data Emotion Based On Twitter Profiller

Sentiment analysis can be measured through the Twitter profiler from previously crawled document data. The Twitter profiler widget will identify and measure the emotional probability of each document by classifying Ekman's, Plutchik's, and Profile of Mood States (POMS). The sentiment analysis results using the Twitter Data Profiler widget show that 937 data tweets show a joy response. This feeling of joy dominates with a percentage value of 93.51% of the total processed tweet data. Next, 52 data tweets, or 5.19%, are identified as tweets showing feelings of surprise. On the other hand, only a small number of tweets show negative sentiments. For example, on feelings of fear, the results of sentiment data using the Twitter profiler widget show 5 or 0.5% of the tweet data feeling feelings of sadness and fear. The smaller number was also obtained by sentiment analysis results, which showed feelings of anger and disguise where each of these sentiments only contained 5 or 0.50 & 2 or 0.20%.

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Source: Processed by Orange Data Mining

Figure 8. Data Emotion Based on Twitter Profiller Visualisation

Discussion

This study processes 1,000 metadata in the form of tweets from Twitter with the keywords "Amil Zakat," "Lembaga Zakat (In English:Zakat Institution)," and "Lembaga Amil Zakat" (In English:Amil Zakat Institution). The results of the sentiment analysis using Orange Data Mining show that most of the tweets with the most likes and retweets have the same characteristics, which are tweets in the form of news or informing the public about amil zakat activities. Meanwhile, the words that appear most in twitter conversations are "zakat", "institution", and "national". In addition, these tweets also have the same characteristics as involving several large institutions or organizations with a large number of members or employees. In this research, BAZNAS (Amil Zakat National Agency) and the Indonesian Ministry of Law and Human Rights (Kemenkumham RI) are the most active institutions and appear a lot in this research tweet. As previously discussed by Herianingrum et al., (2022) in their research, it was stated that collaborative relationships between amil zakat and other institutions are highly recommended because they can strengthen and increase zakat fundraising at BAZNAS in this regard. In this study, the Indonesian Ministry of Law and Human Rights leadership is very influential in deciding policies so that civil servants in the environment can pay their zakat through BAZNAS.

In addition, the organizational communication carried out by the Ministry of Law and Human Rights of the Republic of Indonesia looks very good because it is followed by ranks at the grassroots level, such as the provincial and city levels. Researchers found lots of tweets originating from institutions under the Indonesian Ministry of Law and Human Rights who retweeted tweets posted by the Twitter account of the Indonesian Ministry of Law and Human Rights or made their tweets with the same pattern and content as tweets from the Ministry of Law and Human Rights (Kemenkumham RI) account. Communication patterns through digital media such as Twitter are very effective because they can provide clearer information and appeals to readers (Hudaefi & Beik, 2020).

In addition, researchers found many tweets that informed the amount of zakat and its distribution to mustahiq. Tweets in the form of information like this serve as a form of information disclosure from amil zakat institutions which will ultimately be able to increase public trust as muzakki because people become aware of the purpose of the zakat funds they paid (Abdullah et al., 2023; Mira et al., 2020; Ratnasari et al., 2023). Currently, there is a tendency for amil zakat institutions to publish documentation and activities that have been carried out through social media. Kailani & Slama, (2020) explained in their research that donors or muzakki in this digital era have great hopes for amil zakat institutions to show efficiency and transparency in their donations more quickly. Social media is one of the media that can display content that you want to publish to the broader community quickly and in real-time.

The researcher also found that zakat with the type of zakat fitrah is the type of zakat that appears a lot on Twitter. Zakat fitrah is widely discussed by netizens on Twitter because it is related to the time of collecting this research metadata in the month of Ramadan. As one of the obligatory acts of worship, zakat fitrah appears and is the most discussed on Twitter. The researcher wants to underline that besides zakat fitrah, other types of zakat have no less great potential in Indonesia. For example, agricultural zakat has a potential of IDR 19.9 trillion, zakat assets IDR 19.51 trillion, zakat money IDR 58.78 trillion, zakat income and services IDR 139.7 trillion, and corporate zakat IDR 144.5 trillion (BAZNAS, 2022). The dominance of the topic of zakat fitrah that often appears on Twitter indicates that several parties involved in the zakat ecosystem are still focused on the potential of zakat fitrah, while the potential for other types of zakat is still not much looked at.

Overall, the sentiments and emotions shown by the community regarding amil zakat are neutral. The study results show that feelings of joy dominate the emotions shown by the public through tweets on Twitter about the amil zakat institution. Some tweets with joy emotions are shown in tweets that define the work of amil zakat as a noble profession and has a high position before Allah SWT. Several other tweets that also show joy emotions invite young people to the Zakat Awareness Movement as an effort by the amil zakat institution to increase the awareness and intention of young people to pay their zakat when the nisab and haul have been reached. This neutral sentiment and joy emotions are very important for the performance of amil zakat in collecting zakat funds from muzakki in the future. With the bonus demographic expected to be dominated by young people in the 16-64 year age group by 70% in 2022 (Badan Pusat Statistik, 2022), the use of social media and other digital media is very important in campaigning for the obligation to pay zakat (Mohd Suki et al., 2022). It is hoped that zakat campaigns through digital media, such as those carried out by several institutions in this study, can provide more inclusive content and be more readily accepted by young people (Alam et al., 2022; Hudaefi & Beik, 2020).

CONCLUSION

Twitter is one of the most popular media used by the public, especially in discussing the theme of amil zakat. Of the 1,000 tweets processed in this study, many Twitter users discussed the pressure for collecting zakat funds to be channeled to amil zakat institutions such as BAZNAS. The results show that tweets with the highest number of likes and retweets have a form of news content or inform the public about amil zakat activities. Some of the topic words that appear most often are "zakat", "badan" (in English:Institution), "nasional" (In English:National), "baznas", "disalurkan" (In

English:Distributed), "diterima" (In English:Received), "fitrah" (Onte type of Zakat), "perolehan" (In English: Earning), "keluarga" (In English:Family), "penyerahan" (In English:Delivery). Overall, the sentiments and emotions shown by the community regarding amil zakat are neutral. The study results show that feelings of joy dominate the emotions shown by the public through tweets on Twitter about the amil zakat institution. Some tweets with joy emotions are shown in tweets that define the work of amil zakat as a noble profession and has a high position before Allah SWT.

Based on these findings, the researcher provides suggestions for amil zakat institutions to continue to develop a language of communication with a higher intensity through social media and digital media covering activities carried out by amil zakat institutions to nominal reports on zakat fund meetings and their distribution. Amil zakat institutions also cannot focus on zakat fitrah only. However, they can start trying to target other types of zakat, for example, by collaborating with government agencies or private companies by inviting their employees to pay zakat income (zakat maal) through amil zakat institutions. Researchers see that from some of the tweets in this study where the Ministry of Law and Human Rights of the Republic of Indonesia can be said to be quite successful in encouraging its employees to channel their zakat through amil zakat institutions which can be seen from the considerable number of likes and retweets from Twitter netizens. This indicates that the steps taken by the Indonesian Ministry of Law and Human Rights leadership are supported and appreciated by netizens on Twitter.

This study has several limitations, especially in the amount of metadata used and the limited coverage time. In addition, this research uses tweet metadata derived from netizen conversations in Indonesia, the majority of which still use Indonesian as the primary language. This results in the output of machine learning data processing that is also in Indonesian, so some people, especially those from outside Indonesia, will need help understanding the contents of this research.So, for further research, the researcher hopes to increase the amount of metadata used, and the data collection time can use a longer time frame, for example, within six months or one year, so that the research results obtained will be much richer. Future research can also take metadata from outside Indonesia, especially in countries with a majority Muslim population, and use English as the primary language. This future research can also explore other forms of study, such as comparing two different metadata originating from two countries, namely countries with a majority Muslim population and countries with a Muslim population as a minority.

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