




Investigating Netizen Sentiment Toward Halal Certification in Indonesia Using Machine Learning

Investigasi Sentimen Netizen Terhadap Sertifikasi Halal di Indonesia Dengan Machine Learning

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ABSTRACT

This study examined the most discussed halal certification terms and topics on Indonesian Twitter. This study also explored the sentiments and opinions of Indonesian netizens on halal certification. This analysis uses Twitter tweets from April 10 to 24, 2023. A quantitative method was used by using Orange Data Mining. Researchers used the keywords "Sertifikasi Halal", "Label Halal" and "Halal MUI" to obtain 1,000 tweets. The results of the study show that the tweets with the highest number of likes and retweets discuss the ease of obtaining Halal certification, which is guaranteed by the Cipta Kerja Law. In addition, the words "halal", "certification", and "MUI" are the most frequently used words in Twitter conversations. The most discussed topics by netizens about halal certification include "halal", "certification", "food", "MUI", "product", "sucofindo", "permit", and "safe". Twitter is dominated by tweets with neutral sentiments shown by joy emotions, as much as 68.22% of the total tweets.

Keywords: Halal certification, sentiment analysis, Twitter, Machine learning, Orange data mining

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ABSTRAK

Penelitian ini bertujuan untuk menemukan kata-kata dan topik yang paling banyak dibicarakan tentang sertifikasi halal di Twitter Indonesia. Serta untuk menemukan sentimen dan emosi netizen Indonesia tentang sertifikasi halal. Data penelitian ini berasal dari tweet Twitter yang diambil dari 10 April 2023 hingga 24 April 2023. Metode kualitatif dilakukan dengan bantuan Orange Data Mining. Peneliti menggunakan kata kunci "Sertifikasi Halal", "Label Halal", dan "Halal MUI" untuk mendapatkan 1.000 tweet. Hasil penelitian menunjukkan bahwa tweet yang memiliki jumlah like dan retweet terbanyak membahas tentang kemudahan perizinan sertifikasi halal yang dijamin dalam UU Cipta Kerja. Selain itu, kata "Halal", "Sertifikasi", dan "MUI" merupakan kata yang paling sering muncul dalam percakapan di Twitter. Topik yang paling banyak diperbincangkan oleh warganet mengenai sertifikasi halal antara lain topik "halal", "sertifikasi", "makanan", "MUI", "produk", "sucofindo", "izin", dan "aman". Twitter didominasi oleh tweet dengan sentimen netral yang ditunjukkan dengan emosi kegembiraan sebanyak 68,22% dari total tweet.

Kata Kunci: Sertifikasi Halal, Sentiment Analisis, Twitter, Machine Learning, Orange Data Mining

I. INTRODUCTION

Muslim consumers make a huge contribution to the world economy. Dinar Standard (2022) noted that the total expenditure of Muslim consumers worldwide in 2021 will reach USD 2 trillion, growing 8.9% compared to 2020. The halal sector, which caters to Muslim consumers by offering items that comply with Islamic rules, is growing as the Muslim consumer economy grows. The halal industry represents the obedience of Muslims in consuming halal and tayib products (Insani et al., 2019; Jannah & Al-Banna, 2021). In addition, the halal industry is considered to have stable performance and even tends to experience substantial increases in all sectors (Ab Talib & Wahab, 2021). Muslim customers grow as the Muslim population grows globally, increasing the demand for halal products to meet their changing needs (Khan et al., 2022; Ratnasari et al., 2019; Septiarini et al., 2022). For example, during the COVID-19 pandemic, the halal food and fashion industries still experienced positive growth of 1.5% and 1%, respectively. However, in the same report, the demand for halal cosmetics and Islamic-themed media and recreation experienced a slight decline, but is still much better than the global demand for products.

Data from Royal Islamic Strategic Studies Center (2021) showed that there are currently 1.94 billion Muslims worldwide, which is a potential market for the halal industry (Utomo et al., 2020). Halal products encompass more than just religious considerations and regulations; they also ensure the health, sanitation, and safety of the product (Elasrag, 2016). Therefore, halal products are not only important within the Muslim community, but are also essential to individuals who do not identify as Muslims. This phenomenon is evidenced by the increasing propensity of non-Muslim consumers to seek out and consume halal products (Billah et al., 2020; Timur, 2022). Halal products are perceived to be of high quality, clean and guaranteed (Timur et al., 2022). Halal products, previously synonymous only with halal food, are now developing in almost all types of tradable products and services, such as halal cosmetics (Anubha, 2021; Masood & Zaidi, 2023; Septiarini et al., 2022), halal tourism (Battour et al., 2022; Ratnasari et al., 2020; Wibawa et al., 2023), halal pharmaceutical (Kasri et al., 2021; Nawawi et al., 2018), halal fashion (Krisjanous et al., 2022; Sumarliah et al., 2022; Tarofder et al., 2022), halal media and recreation (Jannah & Al-Banna, 2021; Shah et al., 2020) and halal logistics (Ab Talib & Wahab, 2021; Ngah et al., 2022; Omar & Jaafar, 2011). The development of the halal industry and its related products has played a significant role in the emergence of new terminologies within the halal sector. These terms include halal certification, halal logos, halal labels, and halal brands (Ali et al., 2018; Aziz & Chok, 2013; Jamal & Sharifuddin, 2015; Zainudin et al., 2020).

Halal certification is a reference standard for consumers to evaluate whether a product or service complies with the provisions of Islamic law (Azam et al., 2019). Meanwhile, the halal logo, halal label, and halal brand represent the results of halal certification, which can be included in the product packaging as a marker and marketing tool aimed at increasing consumers' halal awareness and repurchase intention (Jannah & Al-Banna, 2021; Shahid et al., 2022; Timur, Battour, et al., 2023). Products with halal certification can also attract consumers because the halal certification can increase the competitiveness of a product in the eyes of international consumers (Ratnasari et al., 2019). Bouzenita et al., (2019) and Khan et al., (2022) highlighted the importance of halal certification in increasing the credibility of a product. Halal-certified products can increase consumer trust and reduce skepticism when consumers have doubts about the safety and cleanliness of a product (Wahyudin et al., 2022). Companies that prioritize halal certification in the products they produce will also gain a good image among consumers because they will be seen as complying with the Islamic requirements for the halal principle of a product (Sayogo, 2018).

Indonesia is a nation that places a high priority on promoting halal certification. As a nation with the second largest Muslim population in the world, Indonesia has significant potential as a market for halal products. This observation can be made in the Global Islamic Economy Indicator 2022 study published by Dinar Standard (2022) which stated that Indonesia is ranked 4th as a country that has a level of development and development of the global Islamic economy. In the INDEF, (2022) policy brief, the urgent preparation of infrastructure for the accelerated halal certification process is required as one of the steps to accelerate the Indonesian government's ability to meet the requirements of business actors for halal certification. The Indonesian government requires micro and small enterprises with processed goods to be halal certified. This requirement is outlined in Law No. 33 of 2014 on Halal Product Guarantees, which has been amended to Law No. 11 of 2020 on Cipta Kerja. Based on a written

halal fatwa issued by the MUI, BPJPH or the Halal Product Assurance Organizing Agency issues halal certificates (Sumarlah et al., 2022; Utomo et al., 2020).

On the other hand, the application of mandatory halal-certified products in Indonesia still faces several challenges. For example, there is still a need for regular monitoring of halal processes by producers (Rahman et al., 2022). Halal certification procedures are considered to be too strict, so economic actors are even reluctant to take care of halal certification for the products or services they sell (Zulfakar et al., 2014). One of the contributing factors is the lack of public awareness and education about the importance of producing halal-certified goods and services (Aziz & Chok, 2013). This phenomenon has resulted in a growing demand for halal items that have obtained official certification (Ratnasari et al., 2020; Vargas-Sánchez & Moral-Moral, 2020). In addition, some business actors continue to believe that the management of halal certification is overly strict and governed by an excessive number of rules (Marzuki et al., 2012). This is also supported by Rafiki & Abdul Wahab (2016) further affirmed this notion, asserting that the reluctance of corporate actors to pursue halal certification persists due to factors such as exorbitant expenses, rigorous regulatory requirements, and a dearth of accessible information.

Several previous studies are relevant to this research in several aspects. Feizollah et al., (2021) and Ainin et al., (2020) attempted to identify sentiment by focusing on halal tourism. The two studies differ in that each uses a different set of tweets. The study by Ainin et al., (2020) conducted crawling tweets that used English and Malay, while Feizollah et al., (2021) only focused on tweets in English. Both of these studies have drawbacks because they cannot process tweets in Indonesian, which is the primary language used by the people of Indonesia as a country that has great potential for the halal industry. Several other studies, such as Mostafa (2020) and Mostafa (2019), chose the topic of halal food for their research, which came from Twitter's social media metadata. The research findings of the four studies were limited to sentiment analysis only. So far, researchers have yet to find a study using a sentiment analysis approach that includes the topic of halal certification along with identifying the emotions shown in the processed tweet metadata.

This study aims to examine and analyze the prevailing public sentiment in Indonesia regarding Halal certification, which serves as the main initiative of the Government of the Republic of Indonesia in promoting the growth of Halal business. Furthermore, this study aimed to identify the prevalent topics and dialogues that were extensively discussed by Twitter users in conjunction with their corresponding emotional expressions. The results of public sentiment were limited to identifying neutral, negative and positive emotional states. More detailed results were explained by the emotional expression results. Emotional expression was expressed in terms of words that reflect the overall sentiment of the tweets being studied. This research provided the results of society's sentiments and perceptions from a different perspective that comes from cyberspace. The results of this study contributed to academics and business people in the halal industry as a benchmark for measuring public perceptions of halal certification in Indonesia. In addition, the research findings can be developed into strategic policies for the government to increase the literacy, awareness, and intentions of halal industry players in applying for halal certification for the products they produce.

II. LITERATURE REVIEW

Definition of Halal Certification

Halal certification verifies and evaluates goods and services in accordance with halal standards under Shariah law (Ratnasari et al., 2019). The halalness of a product covers all aspects, starting from the production process, packaging, storage, distribution and transaction processing of the product so that it can be used or enjoyed by consumers (Bouzenita et al., 2019). With the increasing demand for halal products worldwide, the government and related authorities must respond quickly by putting together a broader policy on labeling and certification from the aspects of production, processing and storage of halal products (Bouzenita et al., 2019). An independent body issues halal certification through a halal assurance system, which covers upstream to downstream. This is done to reduce the possibility of fraud or falsification of halal certificates issued by irresponsible parties (Zulfakar et al., 2014). Halal certification provides both Muslim and non-Muslim consumers with a sense of security and comfort when consuming a product.

Role of Halal Certification

Halal certification is crucial for all actors in the halal ecosystem. Halal certification explains that the product meets the standards and is allowed to follow the Quranic injunctions (Bouzenita et al., 2019; Usman et al., 2021b). A halal-conscious consumer will prefer to buy products with a halal certificate. On the other hand, a non-Muslim consumer who needs more awareness will highly choose products with a halal certificate (Aziz & Chok, 2013; Jannah & Al-Banna, 2021). The issuance of halal certificates provides Muslim consumers with a sense of security and satisfaction, thus facilitating their purchase and consumption of items (Usman et al., 2021b). In addition, halal certification helps producers explain how they can ensure that the products they produce contain all ingredients permitted by Islamic teachings. Halal certification can serve as a guarantor, instilling confidence in Muslim consumers and reducing the possibility of skepticism about a product with possible or questionable ingredients (Wahyudin et al., 2022).

Challenges and Potential of Halal Certification in The Future

While marketers are beginning to realize the importance of halal certification and awareness, more research is needed on halal components and other purchase intention components (Usman et al., 2021b). In addition, consumers need to be sufficiently exposed to halal certification and halal brands (Usman et al., 2021b). In addition, consumers need to be sufficiently exposed to halal certification and halal brands (Aziz & Chok, 2013). The requirement of halal certification for business owners will create additional costs that may make halal products more expensive (Usman et al., 2021a). Not all business entities prioritize the implementation of halal certification for their manufactured goods. The expansion of halal certification services has been observed in both Muslim and non-Muslim countries, driven by the increasing demand and necessity for halal products (Fathi et al., 2016). The growing global Muslim population has the ability to significantly influence the trajectory of the global halal market. Ratnasari et al., (2020) explained that this circumstance will increase the demand for halal-certified food, products, and services. Halal-certified products have added value and will increase the international competitiveness of Indonesian products (Ratnasari et al., 2019). Halal certification will provide assurance and comfort to Muslims when purchasing or consuming products (Usman et al., 2021a).

Sentiment Analysis

Sentiment analysis is a computational method used to evaluate the opinions, attitudes, and emotional expressions of authors regarding a specific topic. This methodology involves the analysis of language, linguistics, and data obtained by text mining (Mailoa, 2021). The process of sentiment analysis requires the use of textual material, which is then subjected to filtering and classification in order to obtain meaningful results. The term or sentence under investigation will elicit an emotional response such as joy, surprise, sadness, fear, disguise, or anger. Text mining can be performed using a diverse range of tools such as "R," "NVivo," "Orange Data Mining," "KNIME," "Weka," "RapidMiner," "Python," and other similar software applications (Hassan et al., 2022).

III. RESEARCH METHODS

The Orange Data Mining application was a tool used in this study, along with a qualitative methodology and a sentiment analysis strategy. In addition, the qualitative methodology was further enhanced by the use of a descriptive strategy, which was used to address research questions through the systematic collection of data, its categorization, analysis, drawing of conclusions, and subsequent reporting. This approach served the purpose of elucidating and providing a comprehensive representation of the acquired data (Mir et al., 2022). Sentiment analysis is a methodological approach that uses text classification to examine language, linguistics, and text mining data to assess the viewpoints, sentiments, and emotions expressed by an author on a particular topic (Mailoa, 2021). The input for sentiment analysis consisted of textual data in the form of words, which were then subjected to filtering and transformation processes to derive sentiments. An expression or feeling of joy, surprise, sadness, fear, disguise, or anger was derived from the processed word or statement.

Orange Data Mining is an open source machine learning software that provides a set of functions for data mining, pattern recognition, and visual data analysis (Mir et al., 2022). Python is the programming language used for Orange Data Mining. Sentiment analysis in Orange Data Mining enables the acquisition of sentiment predictions for individual documents within a corpus or an existing collection of crawled documents. The use of lexicon-based sentiment modules in sentiment prediction offers advantages in terms of its versatility (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 favorites’ count,” “author friend count,” “author followers count,” “author listed count.”

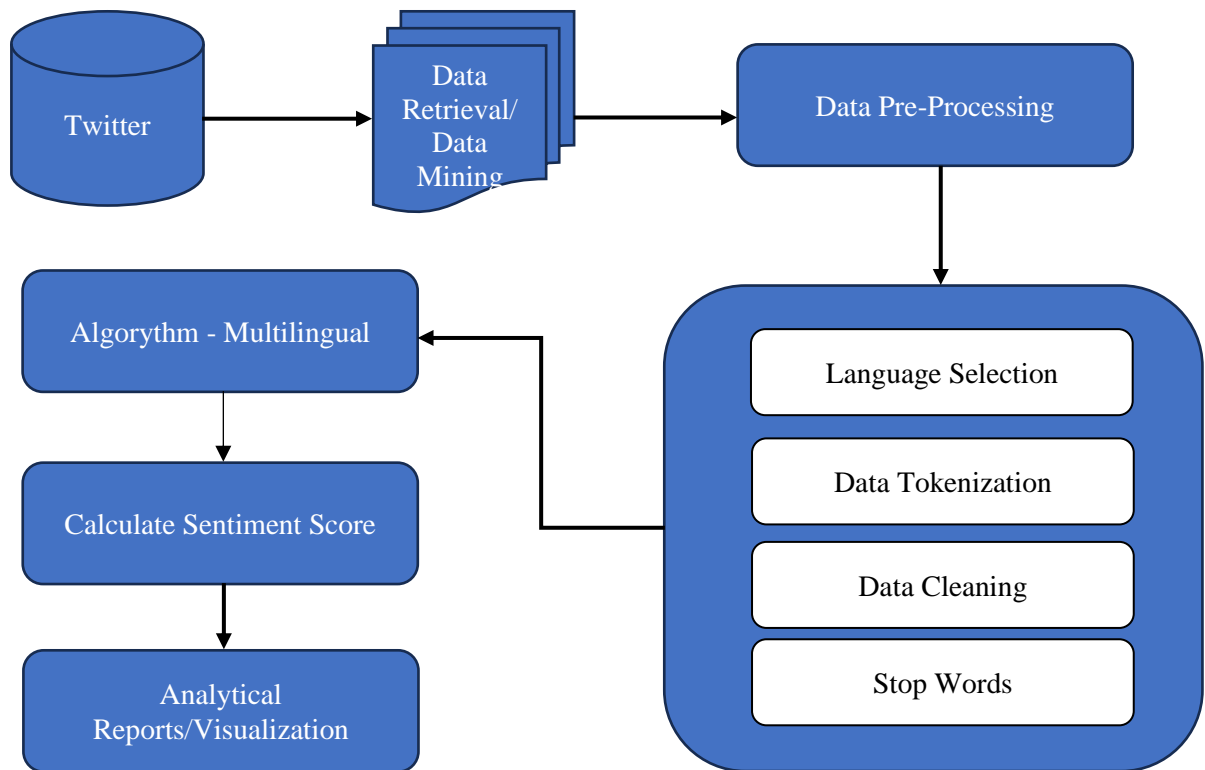


Figure 1. Flowchart on Orange Data Mining

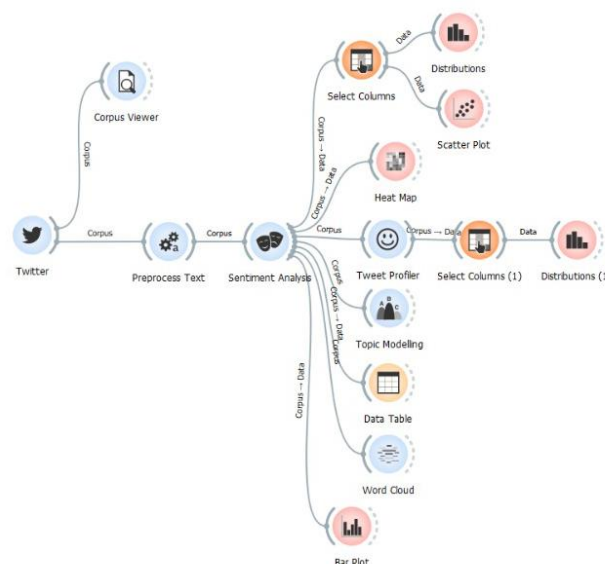


Figure 2. Widget Structure in Orange Data Mining

The data were collected through Twitter tweets, a social media platform. Twitter is known for its tweets, which are short messages with a word limit of 280 characters (Timur et al., 2023; Timur et al., 2023a) . Consequently, the present research relied exclusively on data from the social media platform Twitter. This choice was motivated by the inherent constraint of the word limit in each post, which increases the concentration and validity of the information contained in each tweet (Timur et al., 2023).

The Twitter data crawling method provided many types of metadata, including tweets, retweets, comments, comment replies, number of likes, tweet date, author name, language, and author location. The Twitter Application Programming Interface (API) was used to retrieve metadata sources from tweets on the Twitter social media platform. This extraction process was conducted within the time frame of April 23, 2023 to April 30, 2023 and involves crawling the website <https://developer.twitter.com/> on April 30, 2023. This study focused on Internet users in Indonesia, where the Indonesian language was predominantly spoken. In the process of extracting data from Twitter, researchers used the terms "Sertifikasi Halal", "Label Halal", and "Halal MUI" as search terms. The comprehensive collection of tweet data collected and processed for this study includes a total of 1,000 tweets.

This study consisted of three parts, the first of which was a Twitter data crawl. The second part consisted of preprocessing, sentiment analysis and visualization using the Multilingual Sentiment approach and the Orange Data Mining tool. The third stage consisted of the results of the identification and visualization. In the pre-processing stage, three processes were carried out to eliminate tweet information that wasn't relevant to the study in order to provide cleaner crawler data results. Each letter in the tweet sentence was lowercased using the lowercase function. To remove accents or language that isn't relevant to the study, used the "Remove Accents" feature. Tweets with HTML or URLs were removed using the Remove HTML feature. Tokenization, the second step, divided each word in a tweet so that machine learning can evaluate it more quickly. The next step was to filter comments that are illogical and unrelated to the desired keywords using Stopwords. The Multilingual Sentiment method was used by the researchers throughout the sentiment analysis phase. The only lexicon language technique that can identify tweets or sentences in Indonesian, Multilingual Sentiment, was chosen. Three different types of dictionary files, which include expressions that convey a bad attitude, general terms, and words that indicate a good emotion, were used to identify the recognized data. Positive, neutral, and negative descriptions will be the result of sentiment weighting with Multilingual Sentiment. Overall, this research will try to answer the following questions:

RQ1: Which tweets related to halal certification in Indonesia receive the most likes and retweets from netizens on Twitter?

RQ2: What specific words are most frequently used in Twitter discussions among netizens on the topic of halal certification in Indonesia?

RQ3: What particular topics related to halal certification in Indonesia are predominantly addressed by users on the Twitter platform?

RQ4: What is the predominant sentiment among Twitter users regarding halal certification in Indonesia?

RQ5: What is the predominant distribution of emotional expressions on Twitter related to the topic of halal certification in Indonesia?

IV. RESULTS AND DISCUSSION

Result

Table 1 displays the top five tweets from the mining process metadata that have received the most likes and retweets. The tweet's original Indonesian text and its English translation are presented below:

Table 1. Tweets with Most Likes and Retweets

Content (Original)	Content (In English)	Number of Likes	Number of Retweet
Kemudahan perizinan sertifikasi halal yang diamanatkan UU Cipta Kerja berdampak positif terhadap trend kenaikan jumlah pendaftaran sertifikasi halal setiap tahunnya.	The ease of licensing for halal certification mandated by the Cipta Kerja Law has positively impacted the trend of increasing the number of halal certification registrations every year.	384	35
Betul, Dok. Saya setuju. Semua makanan halal adalah baik. Akan menjadi tidak baik ketika ada pola dan cara yg keliru yg dijalani oleh kita. Dan, Sayyiduna Rasulullah Muhammad SAW sudah memberikan teladan baik itu untuk kita. Salam sehat, Dok.	That's right, Doc. I agree. All halal certified food is good. It will not be good when we live some wrong patterns and ways. And Sayyiduna Rasulullah Muhammad SAW has set an excellent example for us. Greetings, Doc.	180	30

in Table 1, we can see that one of the tweets with the most likes and retweets is a tweet with a sentence inviting MSME business actors to register their products to obtain halal certification immediately. The tweet also mentions that the halal certificate facility program collaborates with cross-sectoral ministries such as the Directorate General of Domestic Trade Ministry of Trade (Kemendag RI)

The results of the research are displayed in the Word Cloud widget area as a representation of a group of highly concentrated terms that frequently appear as themes in tweets about halal certification. The word is used more frequently in the tweet, as indicated by the larger word size in the word cloud. In the word cloud visualization in Figure 1 and Table 2, we can see that the words "halal", "sertifikasi", and "MUI" are the words that appear most often on Twitter with the topic of halal certificates. Next comes the words "makanan", "sertifikat", "perizinan", "senang", "kemudahan", and "produk," which appear the most on Twitter.

Table 2. The Most Appearing Words in Tweet

Word (Original)	Word (In English)	The Word Count in the Tweet
Halal	Halal	920
Sertifikasi	Certification	296
MUI	MUI (Indonesian Council of Ulama)	214
Makanan	Food	195
Sertifikat	Certificate	111
Produk	Product	108
Label	Label	81
Menjual	Selling	79
Sucofindo	Sucofindo	68
Alkohol	Alcohol	65
Perizinan	Licensing	64
Aman	Safe	61
Kemudahan	Convenience	44
Diamanatkan	Mandated	44
Berdampak	Impact	44
Trend	Trend	44
UMKM	UMKM (Small-Medium Enterprises)	24
Senang	Happy	18
Gratis	Free	18
Terjamin	Guaranteed	15

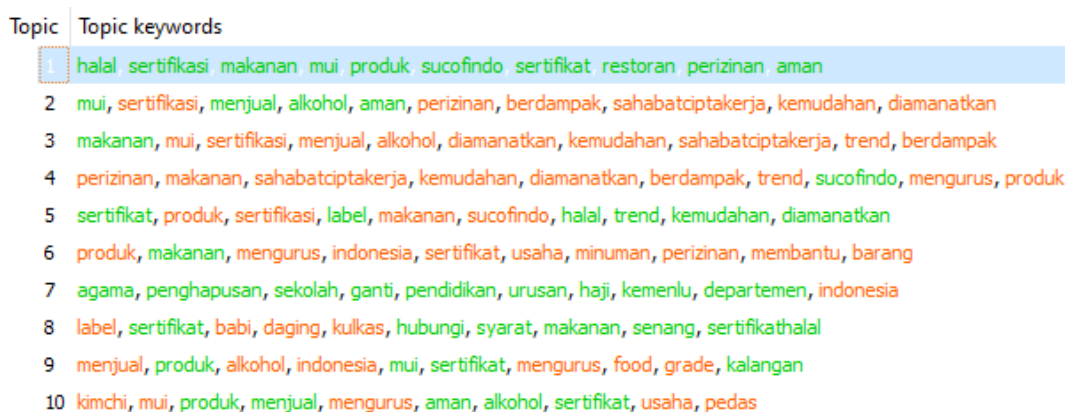


Figure 3. Topic Modelling Visualization

Based on the results of the topic modelling visualization section, it was observed that Orange Data Mining's data processing method identified 10 prominent topics that quickly gained popularity and became the focus of discussions on Twitter. This confirms the findings of the previous word cloud method, which collected data on the most frequently occurring term "word" in discussions related to halal certification.

Figure 3 provides information on topics often discussed on social media and Twitter. The issues that are the main topic of conversation for netizens on Twitter are the same as the words that often

appear in the word cloud visualization in Figure 1. In Figure 2, we can find several words that are the same as "halal", "certification", "food", "MUI", "product", "sucofindo", "permit", and "safe". The study results also found that the topic "restaurant" was also located to be the most discussed topic on Twitter.

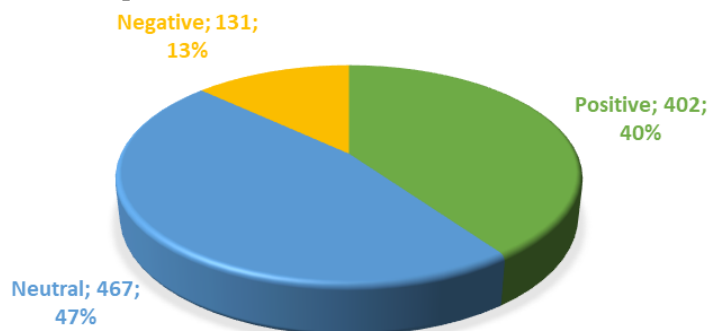


Figure 5. Sentiment Polarity Visualization

Sentiment The polarity visualization shows the overall sentiment (compound) value, which is then broken down into three categories: positive, neutral, and negative sentiment. The sentiment from the used tweet data is positive if the sentiment value is greater than zero. In contrast, if sentiment < 0.00, the sentiment of the tweet data is negative. The tweet is regarded as having a neutral sentiment if the sentiment value is zero. Additionally, Figure 5's graph will show the effects of lowering anxiety. In Figure 5, we can see that of the 1,000 tweets processed in this study, and the majority were tweeted with neutral emotions, namely 47% (467 tweets). As for tweets that show positive emotions by 40% (402 tweets). On the other hand, only a tiny proportion of tweets have negative emotions, namely 13% (131 tweets).

Table 3. Sample Tweets and Sentiment Shown

Content (Original)	Content (In English)	Sentiment Type
Kemudahan perizinan sertifikasi halal yang diamanatkan UU Cipta Kerja berdampak positif terhadap trend kenaikan jumlah pendaftaran sertifikasi halal setiap tahunnya.	The ease of licensing for halal certification mandated by the Cipta Kerja law has positively impacted the trend of increasing the number of halal certification registrations every year.	Positive
Dalam Islam, perintah untuk makan makanan halal dan tayib tidak berdiri sendiri, melainkan disertai dengan pengurusan oleh negara melalui inspeksi pasar yang dilakukan oleh qadhi hisbah (al-muhtasib)	In Islam, orders to eat halal food and Tayib do not stand alone but are accompanied by management by the state through market inspections conducted by qadhi hisbah (al-muhtasib)	Positive
Manfaat sertifikasi halal meliputi Meningkatkan kepercayaan konsumen, meningkatkan pangsa pasar, meningkatkan daya saing bisnis, produk UMKM akan lebih diterima di pasaran, terutama di kalangan konsumen Muslim yang membutuhkan produk halal baik di pasar lokal maupun internasional	The benefits of halal certification include increasing consumer confidence, market share, and business competitiveness. MSME products will be more accepted, especially among Muslim consumers who need halal products in local and international markets.	Positive
Kolaborasi Lembaga Wakaf MUI dengan Bank Indonesia dan Enhaii Halal Tourism Centre Politeknik Pariwisata NHI Bandung (EHTC-PPNHIB) untuk perkembangan pariwisata halal berbasis wakaf	Collaboration of the MUI Waqf Institute with Bank Indonesia and Enhaii Halal Tourism Center NHI Bandung Tourism Polytechnic (EHTC-PPNHIB) for the development of waqf-based halal tourism	Neutral
Kementerian Agama (Kemenag) Kota Tangerang diketahui, memiliki fasilitasi pengajuan sertifikat halal dengan program Sertifikasi Halal Gratis (Sehati) bagi pelaku Usaha Mikro dan Kecil (UMK) melalui skema pernyataan pelaku usaha (self-declare).	The Ministry of Religion (Kemenag) of Tangerang City is known to have facilitated the submission of halal certificates with the Free Halal Certification (Sehati) program for Micro and Small Enterprises (UMK) actors through a business actor statement scheme (self-declared).	Neutral

Ingin mengurus perizinan Halal untuk keperluan usaha anda? PT. Konsultan Legal Indonesia siap membantu anda untuk mengurus Perizinan Sertifikasi Halal, seperti produk makanan, minuman, kosmetik dan barang gunaan lainnya Tolong dibantu proses sertifikat halal untuk kedai makan UMKM pak. Sangat minim infomasi sekali, ke mall pelayanan publik di arahkan langsung ke kementerian agama, Malah yang dari pendamping di arahkan ke majelis itu, kan sekarang sudah ada BPJPH. Makasih pak
 Teliti juga dana yg masuk ke MUI karena membuat label halal semua perusahaan kan bayar, itu duitnya pada kemana?
 Kalau label halal masih susah nyarinya moms, liat ingredients nya saja sm baca bismillah kalo saya

Want to take care of Halal licensing for your business needs? PT. Indonesian Legal Consultants are ready to help you to take care of Halal Certification Licensing, such as food products, beverages, cosmetics, and other useful goods
 Please help with the halal certification process for MSME food stalls, sir. There is very little information. The public service mall is directed directly to the Ministry of Religion. Those from the assistants are required to the assembly. Right now, there is BPJPH. Thank you, sir
 Also, check the funds that go to MUI for making halal labels. All companies pay. Where does the money go?
 If the halal label is still hard to find, moms, look at the ingredients and read bismillah for me.

Neutral
 Negative
 Negative
 Negative

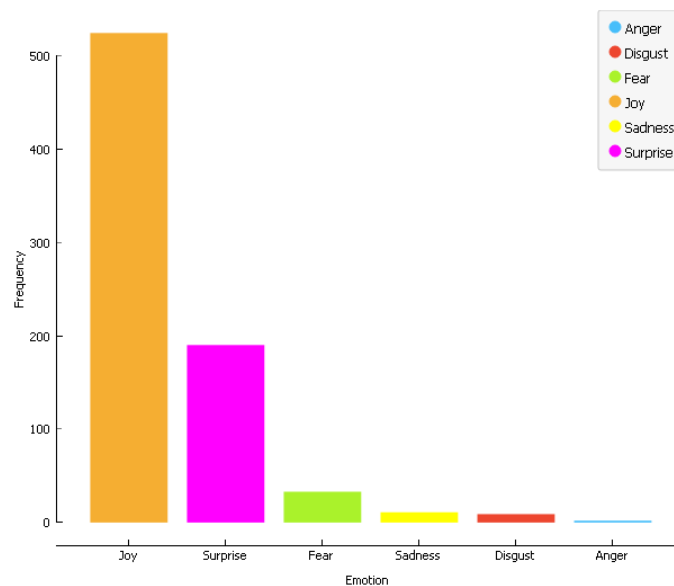


Figure 6. Data Sentiment Based on Twitter Profiller Visualisation

The Twitter Profiler's sentiment analysis can be quantified using data from previously collected documents. The Twitter Profiler widget is designed to categorize and quantify the emotional probability of articles using the frameworks developed by Ekman, Plutchik, and Profile of Mood States (POMS). Based on the results of the sentiment analysis performed by the Twitter Data Profiler widget, it was observed that a total of 526 data messages exhibit a positive sentiment associated with joy. Happiness is expressed in 68.22% of the analyzed tweets. Subsequently, a total of 190 data tweets, representing approximately 24.64% of the sample, were identified as unexpected tweets. Nevertheless, a limited number of tweets convey unfavorable views. The sentiment analysis results for fear, as obtained from the Twitter Profiler tool, show that about 33 tweets, representing 4.28% of the data set, contain expressions of fear.

In general, the results of the study indicate that the tweets with the highest number of likes and retweets are mainly related to the topic of the simplified process of obtaining Halal certification as guaranteed by the Cipta Kerja Law. Furthermore, the terms "halal", "certification" and "MUI" have the highest frequency of occurrence in discussions on the Twitter platform. The topics that have attracted significant attention among netizens regarding halal certification cover a range of issues, including the concept of "halal" itself, the certification process, the food sector, the role of the Indonesian Ulema Council (MUI), the evaluation of products, the involvement of Sucofindo, the acquisition of permits,

and the assurance of safety. The social media platform Twitter shows a significant prevalence of tweets expressing neutral sentiments, as evidenced by the presence of the emotion of joy in approximately 68.22% of the total tweet population. Joy can be described as a positive emotional state that occurs in response to a pleasurable event experienced by an individual (Lwin et al., 2020). The government's use of social media platforms, coupled with collaboration with online media, can facilitate the dissemination of unambiguous information about halal certification, thereby increasing public understanding. The Indonesian government has the potential to further increase the allocation of halal certification quotas, particularly for micro, small, and medium enterprises (MSMEs) that seek to acquire halal certificates at no cost.

Discussion

The study analyzed 1,000 tweets using Twitter's 'Sertifikasi Halal', 'Label Halal' and 'Halal MUI'. The results of data processing using Orange Data Mining showed that the tweets with the highest number of likes and retweets were tweets that contained information about the obligations of business people to complete halal certificates for each product produced and the facilities offered by the Cipta Kerja Law. In submitting halal certificates, starting from stopping the submission time to the use of digital technology to increase efficiency. Wannasupchue et al., (2023) explained that the implementation of halal certification obligations has three challenges: the complicated process of obtaining halal certification, the recognition of business actors, and the high cost of halal certification. Cipta Kerja law aims to reduce these obstacles so that the intention of business actors to process permits through halal certification can increase so that both producers and consumers can benefit. Retweet expresses one's support for the retweeted tweet message (Liu et al., 2012). This means that many netizens on Twitter agree and support that the ease of the halal certification process provided by the Indonesian government through the Cipta Kerja law can increase the desire of business actors to apply for halal certification. Halal certificates can increase the competitive advantage of MSMEs, increase consumer trust and satisfaction, increase the credibility of the company's image, and can be a marketing tool in efforts to expand to a broader market (Ratnasari et al., 2019). In addition, halal certificates can also increase the transparency of the attributes possessed by a product (Sumarliah et al., 2022). If a business actor has a halal certification, it will automatically increase consumer halal awareness (Aziz & Chok, 2013). A person will have the intention to buy a product if he has a high level of awareness (Nurillah et al., 2022; Ratnasari et al., 2023; Timur & Herianingrum, 2022).

The results of the study also revealed a number of terms frequently observed in the Twitter chats, which signify good aspects associated with the issue of halal certification in Indonesia. For example, the occurrence of the words "trend", "convenience", "MSMEs", "happy", "free" and "guaranteed". These words represent the emotions of business actors who are happy with the programs mandated by the Cipta Kerja Law, such as the cost of obtaining halal certification from the free self-declaration route, or business actors who do not need to incur costs because the government has borne the cost. This innovation is considered to provide many conveniences for business actors, especially for MSMEs, who previously wanted to apply for halal certificates but still needed to incur the high costs. Overall, the development of the Indonesian government's Accelerated Halal Certification Program shows a positive trend in the number of applications. The interesting thing is that the researchers found that the word "food" is one of the words that appear frequently in conversations on Twitter about halal certification. It is natural that the word "food" appears frequently, considering that food products have the greatest urgency. However, it is imperative to emphasize that the responsibility of non-halal certification extends beyond food products. It encompasses a wide range of products, including beverages, medicines, cosmetics, chemical substances, biological materials, genetically engineered products, and various things used by society.

Overall, the 1,000 tweets about halal certification used in this study show a neutral sentiment with joy dominating. Several conversational tweets that show positive sentiment are shown in sentences that discuss the benefits to business people of having a halal certificate. This also supports the findings from the word cloud visualization and topic modeling, where researchers find many similar conversations that are happy because halal certification can provide positive things for business development. On the other hand, the researchers also found some conversations that have negative sentiments, for example, in conversations that discuss the lack of information about how to arrange halal certification, especially for MSME business actors. Adriani & Ma'ruf (2020) and Faza et al., (2022) emphasized that if someone needs more information about a product or service, it will also

affect their behavioral intentions. In this study, if business actors do not have enough information and knowledge about how to apply for halal certification and how much it will cost, then in the end, the business actor will also not and will not have much desire to try to apply for halal certification. Another negative tweet also highlighted one of the challenges of halal certification in Indonesia: the need for more transparency in the costs that businesses have to bear. The Cipta Kerja law has stated that businesses do not have to pay a fee to process halal certificates using the self-declaration system. However, it is possible that business actors have not yet received this information, such as one of the negative tweets discussed earlier, that information about halal certificates has not yet been fully communicated to the public.

The issue of the lack of information obtained by the public regarding the procedures for applying and the cost of halal certification is an important point to be resolved. The use of social media owned by several halal certification organizing institutions or other related institutions is very important to present valid and massive information to the public. Collaboration between government agencies can be initiated as an effort to increase literacy and education to the public regarding the halal certification program. Adel et al., (2020) stated that information gathering is one of the important stages in decision-making theory. When someone can collect information and make alternative choices properly, then decision making can be formed more easily. The more information businesspeople learn about halal certification, the more likely they are to apply for halal certification.

V. CONCLUSION

The results of the study show that tweets that have the highest number of likes and retweets discuss the ease of licensing Halal certification guaranteed in the Cipta Kerja Law. In addition, the words "Halal," "Certification," and "MUI" are the words that appear most frequently in Twitter conversations. The most discussed topics by netizens about halal certification include the topic "halal", "certification", "food", "MUI", "product", "sucofindo", "permit", and "safe". Twitter is dominated by tweets with neutral sentiments shown by joy emotions, as much as 68,22% of the total tweets.

This research has practical implications for government regulators, as it suggests the need for ongoing efforts to increase public awareness and understanding of the halal certification program. The government has the potential to utilize social media platforms and establish collaborations with online media outlets to disseminate unambiguous information that is easily understood by the general public. The use of social media can take the form of webinars or other forms of education that allow for two-way communication between the public and relevant institutions. Short videos are also recommended considering the current trend of people preferring the delivery of information in the form of micro-learning or short duration. Interactive quiz is also a form of education that can attract people to learn information about halal certification. With a positive response from the community, the government can continue to increase quotas, especially for MSMEs who want to obtain halal certificates for free.

On the other hand, there were some negative sentiments about the halal certification process in Indonesia. For example, there is still a need for socialization on how to take care of halal certification and how much it costs. However, this study has several limitations, particularly in terms of the number of tweets analyzed and the scope of data collection, which is limited to seven days. As an open source software, Orange Data Mining is limited in its ability to extract tweet data from the last 7 days. Therefore, the results of this study have a short period of data collection. Therefore, in future research, the researcher suggests trying to use a larger amount of data and a longer period of data collection, considering that the halal certification program in the Cipta Kerja Law is a program that has just been ratified and will only be effective in 2022. In addition, data collection over a longer period of time and in larger numbers is recommended. Future research can use the programming language Python or R Studio, which has a wider range of data mining.

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