

Twitter Sentiment Analysis On Halal Cosmetics

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This study aims to analyze sentiments related to halal cosmetic products through data taken from the Twitter social media platform. The method used in this research is sentiment analysis using a Python library known as VADER (Valence Aware Dictionary and Sentiment Reasoner). The data retrieved includes tweets with keywords related to "halal cosmetics" in the period January 1, 2019 to March 28, 2023. The results of this sentiment analysis reveal that the majority of sentiments related to halal cosmetics are positive, with a percentage of around 56.8%. Furthermore, about 36.1% of the detected sentiments are neutral, indicating that most consumers have a neutral view towards halal cosmetic products. Negative sentiments have a percentage of 7.1%, indicating that there is a small percentage of users or consumers who may have problems or negative experiences related to these products. The results of this study provide a better understanding of how consumers respond to halal cosmetic products on the social media platform Twitter, as well as identify opportunities and challenges within this market. The implications of these findings can help manufacturers and stakeholders in the halal cosmetics industry to improve consumer understanding, address emerging issues, and support the growth of this rapidly evolving industry.

Keywords: Halal cosmetics; Twitter sentiment; VADER

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INTRODUCTION

Halal cosmetics is a growing industry that has gained attention in recent years. *The State of the Global Islamic Economy Report 2020/2021* reported that spending on cosmetics in 2019 amounted to 66 billion dollars from 1.9 billion Muslim consumers worldwide, this spending increased by 3.4% from the previous year. (Amalia & Rozza, 2022). Indonesia is the second country after India with the highest spending in the halal cosmetics sector, at \$4 billion. Indonesia is also expected to be a major driver for halal-certified cosmetics, with a population of 270 million requiring halal labeling by 2024 (Chin et al., 2018).

The government has issued a regulation that requires halal certification for products circulating in Indonesia, namely Law Number 33 of 2014 concerning Halal Product Guarantee (JPH Law). As of October 17, 2019 BPJPH carries out the task of the first phase of halal certified obligations for food and beverage products. Furthermore, specifically for cosmetic products, halal certification obligations are set since October 17, 2021 (Puspaningtyas, 2021). The public response and reaction to this second staging is quite interesting and exciting, marking a widespread growing halal awareness in Indonesia (Mastuki, 2021).

The concept of "halal" refers to something that meets the requirements set forth in Islam, both in terms of the ingredients used and the method of production. Halal cosmetic products must not contain ingredients derived from pigs, carrion, blood, human body parts, predatory animals, reptiles, insects. Cosmetic ingredients derived from permitted animals must be slaughtered according to Islamic law to be considered halal (Yusuf E, 2017).

There are several challenges that need to be considered in the development of halal cosmetics. Animal-derived cosmetic ingredients such as gelatin, lecithin, glycerol, fatty acids and collagen are very difficult to verify as halal. Some coloring ingredients may be derived from insects, thus considered haram. In addition, ingredients derived from cattle pose another challenge as the animals may have been slaughtered in a non-halal manner. Not only is the use of halal ingredients necessary in their production but also the overall performance of the cosmetic product, in order to fulfill the requirements of Islamic rituals. For example, lacquered nails need to be water-permeable in order to be rinsed sufficiently (Sugibayashi et al., 2019).

The importance of halal cosmetics has created unique market dynamics. Consumers looking for halal cosmetic products tend to have different needs and

preferences compared to other consumers. They may pay more attention to halal labeling, ingredient composition, and other religious aspects when choosing beauty products (Hashim & Musa, 2014) (Hashim & Musa, 2014) stated that consumers who are more religious will get more knowledge and information on halal products, so this can have an impact on the demand for halal cosmetics. The increase in demand for halal cosmetics is driven by increased knowledge and information on halal products (Rahim et al., 2015). In addition, consumer feelings about halal cosmetic products can also be influenced by social, cultural, and environmental factors (Septiani & Indraswari, 2019).

In order to get a deeper picture to understand consumers' feelings, opinions, and attitudes towards halal cosmetics, research needs to be conducted. Sentiment analysis is a powerful approach in providing important insights into how consumers feel about these products.

LITERATURE REVIEW

Halal can be explained as something that is in accordance with Islamic teachings, such as hygiene and product quality standards (Nghah et al., 2022). Halal is also related to the religious issues of Muslims and the spread of Islamic teachings around the world by adhering to Islamic principles (Annabi, 2021). Although usually associated with food and beverages, the concept of halal nowadays also includes pharmaceuticals and cosmetic products (Nghah et al., 2022). As researched by Shahid (2018), the term "Halal" is not limited to food alone; it also covers non-food areas such as personal care and cosmetic products, lifestyle, medicine, travel, tourism, trade, finance, entertainment, employment, and education. As conveyed in Surah Al-Baqarah verse 168, the concept of halal is indeed explained as something that is intended for all mankind. According to sharia law, products or services that meet halal and toyyiban standards are considered safe to use, engage in, or consume (Masood et al., 2023).

Halal cosmetics are products derived from halal ingredients and produced in accordance with the rules of the halal system, which are designed for use on certain parts of the body, either as a residue or rinse, with the aim of improving the appearance of the body, cleaning, protecting, and changing appearance. Halal cosmetic ingredients are all ingredients derived from plants, soil, water, allowed animals slaughtered according to Islamic law, halal marine animals, and synthetic materials that are safe for consumers and not contaminated with impurities (Sugibayashi et al., 2019).

The main difference between general cosmetics and halal cosmetics lies in the origin of the ingredients. General cosmetics usually focus more on product safety and check for ingredients that may harm consumers, they do not consider the origin of ingredients that are illegal or prohibited according to Islamic law. Whereas halal cosmetics focus more on the source of ingredients, both permitted (halal) and prohibited (haram), used in the product (Isa et al., 2023).

Several types of research have been conducted in the field of halal cosmetics. Research Choirunnisa & Firmansyah (2021) discusses the impact of halal certification, consumer awareness level, product price, and brand image on purchasing decisions for halal cosmetic products. This study revealed that halal certification plays an important role in making purchasing decisions by Muslim consumers. The study also notes that the halal cosmetics market at the global level is expected to experience growth during the predicted period, and the factors that influence consumers in choosing halal cosmetic products are significant.

In research Isa et al. (2023) found that factors such as level of religiosity and product characteristics, including ingredients used, halal logo, and halal certification, have a significant influence on consumer purchasing decisions in the context of halal cosmetic products. This study shows that halal cosmetic products are not only about religious aspects, but also represent an opportunity to increase sales and gain a competitive advantage. The halal cosmetics industry is experiencing significant growth, and this provides great potential for businesses in it.

Research Suhartanto et al. (2020) tried to assess customer loyalty to halal cosmetics using three integrated loyalty routes of product quality, emotional attachment and religious determinants. This study reveals that for halal cosmetics, customer loyalty is driven more by emotional attachment and product quality compared to religiosity. In addition, religiosity does not moderate the relationship between customer satisfaction and customer loyalty.

Research Putri et al. (2019) analyzed the perception of halal in Islam can affect a person's repurchase intention assessed from the level of religiosity, knowledge, attitudes and their influence in determining the intention to repurchase halal cosmetics in Indonesia regardless of religion. The results showed that there was a significant influence between religiosity and customer knowledge on the intention to repurchase halal cosmetics on indirect relationships.

Mohezar et al. (2016) tried to analyze the factors that motivate young Muslim consumers in emerging markets to adopt halal cosmetics. shows perceived product characteristics, social influence and consumer innovation influence young Muslims to adopt halal cosmetic products. This study also reported religiosity as a moderator between these three predictors and halal cosmetic adoption. Handriana et al., (2019) analyzed the purchasing behavior of the millennial generation towards halal cosmetic products in Indonesia. The results showed that the accepted hypothesis was the effect of perceived value on trust, brand image on trust, brand image on attitude, religious beliefs on attitude, halal certification on halal awareness, trust on attitude and halal awareness on attitude. As for trust, attitude towards products, halal awareness affects the intention to buy halal cosmetics.

Research Masood et al. (2023) found that the halal cosmetics sector is still in its infancy, and several literature reviews have been conducted around the world to evaluate the research gap in the halal cosmetics and skincare business domain. This study shows that understanding the halal cosmetics industry can enable developing countries to achieve sustainable development goals through the halal cosmetics industry.

Based on some of the research above, it can be concluded that research on halal cosmetics has become a research topic that has become the focus of attention in recent years. From these results, as far as the researcher's observer has not found research that specifically discusses halal cosmetics using sentiment analysis approaches using twitter data. Therefore, this research was conducted to complement existing research and fill the void of previous research. The purpose of this research is specifically to see sentiment on the theme of halal cosmetics with tweet data from twitter.

METHODOLOGY

Data Collection

This research uses data in the form of secondary data. The methodology used in this research is a qualitative method approach by analyzing 1,139 Twitter social media tweets in the research period January 1, 2019 to March 28, 2023. The goal is to identify positive, negative, or neutral sentiments related to halal cosmetics. The sentiment analysis process involves the use of specialized software that can classify text or other unstructured data based on the emotional expressions and attitudes contained therein. The results of this

analysis will be used to support the conclusions and findings in this study.

Sentiment Analysis

Sentiment analysis is one of the natural language processing methods whose purpose is to find out the emotional sentiment of the analyzed text (Nimesh et al., 2019). Research on sentiment analysis has grown since 2003 and is part of Text Mining which is computational research based on sentiment, emoticons, opinions, comments and any expressions expressed by text. Sentiment analysis is focused on classification review based on polarity. Based on classification, sentiment analysis is divided into two main groups. Namely classification documents into opinions or facts, otherwise known as subjectivity classification and

classification documents into positive or negative, otherwise known as sentiment analysis (Abhimanyu et al., 2022). This is an important process to determine documents that have opinions and documents that infer positive, negative or neutral opinions (Kosasih & Alberto, 2021).

Vader

To classify tweets, a Python library called VADER is used (Rusydiana & As-salafiyah, 2022). Vader is an acronym for Valence Aware Dictionary for Social Reasoning which is used as a model for sentiment analysis and is able to determine the diversity of data through the intensity of emotional strength present according to the available Lexicon data dictionary. (Elbagir & Yang, 2019).

$$Tweet_{sentiment} = \begin{cases} positive & \text{if } CS_{tweet} > 0.05 \\ negative & \text{if } CS_{tweet} < -0.05 \\ neutral & \text{if } -0.05 > CS_{tweet} > 0.05 \end{cases}$$

Vader will calculate a composite score, which will be used to classify tweets. The criteria for grouping positive, neutral and negative, namely if the compound result is more than 0.05, it is included in the positive category represented by the number 1, then if the compound result lies between -0.05 and 0.05, it is included in the neutral category represented by the number 0 and finally if the compound result is below -0.05, it is included in the negative category represented by the number -1 (Mustaqim, 2020). The advantage of using VADER polarity detection is the availability of a dictionary that contains the value of each word. Preprocessed text will be scored based on the lexicon whether it is positive, negative or neutral and add a total score (compound). Several VADER commands using the python programming language will be executed, and VADER will call the lexicon data from the NLTK server to calculate the polarity class sentiment. (Abhimanyu et al., 2022). Other research using sentiment analysis on Islamic economics and finance has been done by Mujahidah & Marlina (2020), As-Salafiyah (2021), Haidar et al., (2022), Riani et al., (2022), and Mu'adzah (2022).

RESULT AND DISCUSSION

This research tries to calculate Twitter sentiment in the research period January 1, 2019 to March 28, 2023 about halal cosmetics. As is known, sentiment analysis is commonly used to measure public sentiment on certain topics. To obtain secondary data, the research was conducted by searching for tweets related to halal cosmetics on the twitter platform.

In this research, the tool used is the Python programming language library, which includes Vader as one of its components. Vader was used to process the data and classify it into three groups based on its sentiment, namely positive, neutral and negative. The classification is obtained by measuring the value of each tweet. Each tweet will be given a certain score or value, which will later be used to classify the tweet into one of the three categories, namely positive, negative, or neutral, based on the resulting value. The results of sentiment analysis on the theme of halal cosmetics can be seen in the following diagram

Sentiment Polarity on Tweets Data

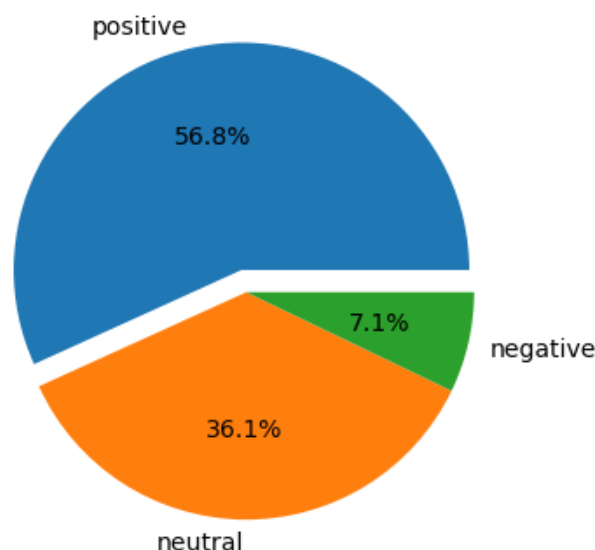


Figure 1: Sentiment Score

From the figure above we can see that the existence of halal cosmetics has a positive sentiment of 56.8%, then a neutral sentiment of 36.1%, and a negative sentiment of 7.1%. The sentiment results are obtained from tweets written by Twitter users, then analyzed based on the words conveyed in the form of written text. The words will be ranked or classified in the range from negative, neutral, to positive based on their sentiment.

The results of sentiment analysis towards halal cosmetic products show a fairly positive pattern overall. In the data sample analyzed, about 56.8% of the sentiments expressed by users are positive. This indicates that the majority of users or consumers are satisfied or positive about the halal cosmetic products they discuss or review on various platforms, including social media.

In addition, about 36.1% of the sentiments that appear in the analysis are neutral, which has significant implications in the context of the halal cosmetics industry. This neutrality suggests that most users or consumers may not have a firm view on halal cosmetic products or may even lack adequate understanding of the products. This calls for further action in education and awareness raising regarding halal cosmetic products (Shahid, Ahmed & Hasan, 2018). Efforts need to be made to provide more comprehensive information to consumers regarding the benefits and advantages of halal cosmetic products, including how they meet strict

halal standards (Khan & Haleem, 2016). In addition, halal cosmetics manufacturers also need to increase transparency in the provision of product information, such as the source of ingredients and production processes (Annabi & Ibidapo-Obe, 2017). By addressing this uncertainty and ignorance, the halal cosmetics industry can expand their market, increase consumer confidence, and ensure that their products gain wider acceptance among the public.

Nonetheless, the 7.1% negative sentiment towards halal cosmetic products is an important signal that should not be ignored. This finding indicates that there is a small percentage of users or consumers who may experience problems or negative experiences related to these products. This is a wake-up call for halal cosmetic manufacturers and stakeholders to take proactive measures to improve the quality of the products or services they offer. Improvement measures in terms of product quality, transparency in ingredients used, stricter production processes, as well as better communication with consumers can help overcome this negative sentiment. In addition, listening to feedback and input from consumers who have had negative experiences can help manufacturers to better understand the issues at hand and rectify them. All in all, taking this negative sentiment seriously is a wise move to maintain and enhance the reputation of halal cosmetic products, which in turn can boost consumer confidence and support the growth of the industry.

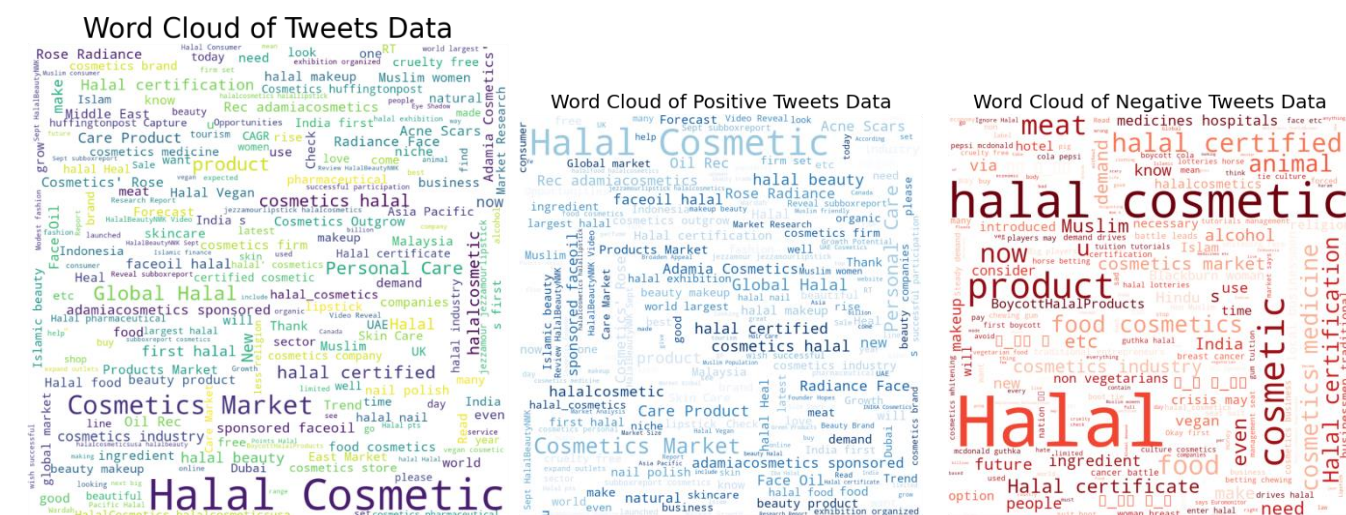


Figure 2: Twitter Word Data Cloud

Furthermore, based on Figure 2, it can be seen that many keywords appear in the halal cosmetics sentiment of the analyzed tweets, including tweets that fall into the positive, negative, or neutral categories. The most popular keywords with a high number of occurrences are shown with a larger word size, including market, global halal, cosmetics industry, halal certified, ingredients.

In the interpretation of the analysis results, it can be seen that the words appearing in the positive wordclouds in the tweet data describe positive aspects related to halal cosmetics. For example, words such as "global market" reflect positive views related to the growth of the halal cosmetics market at a global level. "Halal exhibition" shows enthusiasm for halal cosmetics exhibitions that allow manufacturers to showcase their products to a wider market. "Islamic beauty" and "natural" reflect the focus on natural beauty and Islamic principles in products. "Halal certified" emphasizes the importance of halal certification in attracting consumers. "Halal cosmetics" is a term directly related to the product, indicating a positive understanding of the product. "Muslim population" indicates awareness of the large and diverse market that halal cosmetic products can serve (Majid, Sabir & Ashraf, 2015). Overall, this wordcloud provides a positive picture of how halal cosmetic products are seen and understood by consumers, with an emphasis on aspects such as halalness, naturalness, and promising market growth.

Furthermore, the interpretation of the negative wordcloud results in the tweet data reflects the existence of negative sentiments related to several aspects related to halal cosmetics. The word "animal" indicates possible disapproval or concern about the ingredients used in halal cosmetic products that may be related to animals. "Boycott halal products" reflects a call to avoid or

boycott halal products, which is a sign of a movement of rejection or disapproval of these products. The word "avoid" indicates that there are groups that may avoid halal cosmetic products. Words such as "Hindu" and "religion" may indicate tensions or disagreements between different religious groups regarding halal cosmetic products. The implication of the findings in the wordcloud that illustrate the existence of negative sentiments or disapproval towards halal cosmetic products, particularly related to religious issues and the ingredients used in the products, is that the halal cosmetic industry needs to adopt a more proactive approach in addressing differences in views and improving public understanding. First, there is a need for more intensive and informative communication efforts that focus on explaining the principles of halalness of cosmetic products and addressing questions or concerns that may arise from various religious groups. Providing transparent information on the ingredients used in products and meeting strict halal standards should also be emphasized.

In addition, there is a need for dialogue between stakeholders in the industry, including manufacturers, halal certification authorities, and the public, to better understand the existing concerns and seek solutions that can address the issues that arise. Public education efforts should also be enhanced to promote a deeper understanding of the benefits and principles of halal cosmetic products. Thus, the halal cosmetics industry can create a more positive environment and support the growth of products that meet the needs and values of various groups of people, while maintaining the integrity and quality of halal cosmetic products.

FINDINGS

In the data sample analyzed, positive sentiments towards halal cosmetic products dominate, reaching 56.8%. This shows that the majority of consumers are satisfied and positive about the halal cosmetic products they discuss or review on social media and other platforms. About 36.1% of the sentiments are neutral. This indicates that most consumers may not have a firm view on halal cosmetic products or lack sufficient understanding of the products. This suggests the need for further efforts in education and awareness raising regarding halal cosmetic products.

Negative sentiment of 7.1% towards halal cosmetic products. This indicates that there is a small percentage of consumers who may have experienced problems or negative experiences related to these products. This calls for proactive measures to improve product and service quality and address any concerns.

Although Indonesia is named as the largest Muslim country in the world, based on the *State of the Global Islamic Economy Report 2020/2021* Indonesia has not been able to occupy a good position in the indicators of halal pharmaceutical and cosmetic products. Among the causes are halal awareness and a fairly low level of religiosity (Amalia & Rozza, 2022). A better

understanding of religion makes Muslims more selective in choosing products that will be consumed (Elkasysyaf & Hartati, 2021).

From the word cloud analysis, some of the most popular keywords reflect positive aspects associated with halal cosmetics, such as global market growth, halal certification, product naturalness, and product understanding. However, there are also keywords that reflect negative sentiments or disapproval, such as issues related to the ingredients used and the halal product rejection movement. By understanding these findings, the halal cosmetics industry can take appropriate steps to increase acceptance of their products, boost consumer confidence, and maintain positive growth in the industry.

Research Implications

This study identified several suggestions for future researchers to develop further work related to sentiment analysis of halal cosmetics which will hopefully help a deeper understanding of how consumers respond to products, as well as how the industry can increase positive perceptions and meet consumer needs. Table 1 shows possible research topics and suggestions based on the identification of the findings of this study.

Table 1: Further Research

Topic	Further Research
Sentiment Analysis in Geographic Context	Further research could examine differences in sentiments towards halal cosmetic products across different regions or countries. This can help understand the cultural differences, regulations and consumer preferences that influence their views towards such products.
Sentiment Analysis by Brand	Studies can focus on analyzing sentiments towards specific halal cosmetic brands. This can help brands to understand consumer perceptions of their products and design more effective marketing strategies.
Influence of Social Media Influencers	Research can explore how the use of social media influencers affects sentiment towards halal cosmetics. How influencers affect consumers' views and whether the influence is positive or negative.
Comparative Analysis with Non-Halal Products	Research can compare sentiments towards halal cosmetic products with non-halal cosmetic products. Is there a difference in sentiment and what are the factors that influence the difference.
Influence of Industry Development	How developments in the halal cosmetics industry, such as the use of new ingredients or technologies, affect consumer sentiment. Whether these innovations enhance or undermine the perception of the product.
Effects of Regulatory Changes	How changes in regulations related to halal cosmetics affect consumer views. Whether the stringency of halal certification requirements has a positive impact on sentiment.
Comparison with Conventional Products	Future studies can compare sentiments towards halal cosmetics with conventional cosmetic products in terms of safety, quality, and effectiveness.

CONCLUSION

Halal cosmetics are part of the healthy and halal lifestyle recommended in Islamic teachings (Darmalaksana, 2021). Consumer awareness of the importance of halal products is increasing and is influenced by knowledge, beliefs, experiences, and information about these products (Hasibuan et al., 2019). This reflects a shift in consumer behavior that is increasingly paying attention to halal aspects in various aspects of life, including in the selection of cosmetic products.

This study provides a summary of the sentiment analysis conducted on halal cosmetics through tweets on Twitter by a group of people, with a total of 1139 tweets that have been evaluated. The results of the analysis show that there are some important findings, namely 56.8% of people express positive sentiments towards halal cosmetics, 36.1% show neutral sentiments, and 7.1% show negative sentiments. The most frequently occurring keywords in the tweets include market, global halal, cosmetics industry, halal certified, ingredients, and so on.

It is important to note that the main purpose of this study is to provide an overview of how people perceive halal cosmetics. However, keep in mind that the data used in this analysis is limited to tweets collected over the past few years, which amounted to 1139 tweets. While this research has used specific sentiment indicators to give the reader a general understanding, it is important to remember that these results are dynamic. Over a longer period of time, the results may change with the emergence of new trends or fluctuations in factors that influence people's perception of halal cosmetics.

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