



Sentiment Analysis of Tweets on Halal Tourism in OIC and Non-OIC Countries

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Abstract. Halal tourism is a sector experiencing rapid growth. Therefore, a study of its trends is necessary. The main purpose of this paper is to examine halal tourism trends in terms of the opinions of Twitter social media users using sentiment analysis. This study used six keywords in the extraction process. A total of 11,274 tweets were examined. Using the extracted tweets, the study (1) analyzed the trend of tweets about halal tourism from 2016 to 2022, and (2) analyzed the sentiment valence about halal tourism in OIC and non-OIC countries. The results showed a high spike in the number of tweets when there was an event to see the country with the best development of halal tourism. This paper also finds no significant gap in the number of tweets between OIC and non-OIC countries. The enthusiasm for halal tourism in non-OIC and OIC countries is the same. Sentiment analysis results also show no significant difference in negative or positive sentiment for both OIC and Non-OIC countries. The development of the halal sector has good potential in various countries. This study found that halal food is the most widely discussed topic related to halal tourism for both OIC and non-OIC countries.

Keywords: Halal tourism · Twitter · OIC · non-OIC · sentiment analysis

1 Introduction

Tourism is a sector that has a significant contribution to the world economy. The tourism sector's potential can be seen in several indicators, such as the share of world GDP and employment. In the last ten years before the Covid-19 pandemic, the tourism sector had around 9 percent share of the global GDP [1]. In 2021, the tourism sector will absorb as many as 289 million jobs. Even though this number has increased after the covid pandemic, it was still below before the pandemic [2].

The Muslim population had a sizeable number of around 1.9 billion in 2020 and covered nearly 25 percent of the world's population [3]. Muslims have faster growth than non-Muslims, and this pattern is expected to last for up to a decade [4]. The large Muslim population is the main driving force in the Islamic economy.

The Islamic economy is formed from needs based on Islamic principles adhered to by Muslims. Currently, Muslims are scattered in various countries with various cultural diversity and geographical conditions. The world's Muslims can boost the economy in 2021 up to around US\$2 trillion in products and services [2]. In carrying out consumption activities, Muslims are under Islamic law, which restricts what is permitted to be

consumed, commonly referred to as “halal” and it is called “haram” when Muslims are prohibited to consume. Many people widely associated halal only limited products, but the consumption of services must also be considered, such as tourism. And from there, there are several studies to define halal tourism.

Halal tourism is a sector that is experiencing rapid growth [5]. This sector is progressing with the growing Muslim population in the world because, at the same time, it will increase the demand for goods and services such as food, hotel accommodation, and other services, which cover a lot in the tourism sector [4].

The Organization of Islamic Cooperation (OIC) was formed initially to establish cooperation between Muslim countries in safeguarding the interests of the Muslim world and promoting international peace. In its development, OIC expanded cooperation in various fields such as economics, science, technology, and socio-culture [6]. One of the focuses of OIC is tourism, especially halal tourism. In June 2022, the 11th Islamic Conference of Tourism Ministers (ICTM) will be held in Azerbaijan. ICTM discussed strategic issues in the tourism sector. Several countries, such as Senegal, Nigeria, and Azerbaijan, presented their tourism potential.

Big data can be defined as a very high volume, speed, and variety of data that requires a better process to seek insight and make decisions [7, 8]. One of the well-known social media used as a big data source is Twitter. Twitter is one of the social media that people around the world widely used. Therefore, Twitter can be used to see public opinion on an issue.

Public opinion can be analyzed, such as sentiment analysis. Sentiment analysis is a field of study that analyses a person’s opinions, sentiments, judgments, and emotions toward product entities, services, organizations, individuals, issues, events, topics, and so on [9]. This sentiment analysis can be applied to the issue of halal tourism and how to see or evaluate halal tourism in several countries.

The following two research questions are addressed in the paper: (1) What is the current halal tourism trend on Twitter? (2) How is the issue of halal tourism being discussed on Twitter? This paper provides a brief literature review on halal tourism and Twitter sentiment analysis. This is followed by the methodology used to collect the data and conduct the analysis. Finally, the study’s limitations and suggestions for future research are highlighted in the conclusion.

2 Literature Review

2.1 Halal Tourism

The Arabic word “Halal” initially meant “allowed, acceptable, permitted, or permissible” [10]. This word is the primary source for the notion of halal, which goes beyond food to encompass all facets of a Muslim person’s life and is not just tied to food or food products. In this sense, the idea of Halal is based on the requirement for any Muslim to have acceptable things from a religious standpoint. All prescribed in religious teachings and the foundation of Muslims’ behavior and actions are referred to as “halal” [11]. Halal refers to everything that can be consumed according to the Quran or Prophetic Hadith [12].

Halal tourism is a form of religious tourism done by Muslims who adhere to Sharia Law daily [13]. One approach to becoming Halal is to adhere to Sharia Laws. The Arabic word “halal” which refers to acceptable and permissible behavior, is translated as “countenanced” for Muslims. In order to accommodate worship that adhere to Islamic teachings, halal tourism refers to the provision of a tourism product and service that caters to the demands of Muslim tourists. Therefore, halal tourism is a form of tourism that upholds Islamic principles [14].

2.2 Web Scrapping

Data has already had a significant impact on many businesses all over the world and in this technological age, it can never take a backseat. Web scraping was used to gain access to data in its optimum form. The information offered on the internet is so valuable that people from all over the world are vying for it. Web scraping has been used for a while and is still beneficial [15].

2.3 Text Mining

Text mining is growing as an effective method for utilizing the potential of unstructured textual data. Text mining can extract knowledge and find patterns and correlations concealed in the data [16]. By analyzing changes in published literature over the previous few years, this study aims to assess the current state of text-mining research and offer helpful information for practitioners and scholars on the key trends, approaches, and applications in the field.

2.4 Sentiment Analysis

Sentiment analysis as a branch of study that examines opinions, sentiments, assessments, and emotions expressed in a language [9]. With the growth of social media, discussion forums, Twitter, and social networks, sentiment analysis has become increasingly important. Sentiment analysis is a task that looks for opinions (such as negative or positive) in text-based content [17]. Based on the subject information in the document, sentiment analysis divides a document into three categories: positive, negative, and neutral.

During the past ten years, sentiment analysis of Twitter data has been popular in studies [18]. Among the widely used social media platforms, Twitter has captured the attention of numerous experts in crucial fields such as the forecasting of political events, consumer brands, box office results for films, stock market performance, and celebrity reputation. The word sentiment describes how a person feels or thinks about a particular topic. It can be difficult to analyze sentiment (opinions) and classify them according to polarity. Other difficulties include the deluge of information on a subject with disparate representations. Two key techniques used to perform sentiment analysis on Twitter data include classification and clustering.

3 Methodology

This study used Twitter data to do sentiment analysis on halal tourism. Between January 2016 and August 2022, English-language Twitter data was gathered. In order to be as thorough as possible, this time frame was chosen, and it incorporates and covers the development of halal tourism. Since the majority of the acquired tweets were in English, the collected tweets were mostly focused on the English language. It is important to note that Twitter and other social media platforms use English between 50 and 72.5 percent of the time [19]. The six keywords were utilized to extract data from tweets [20, 21]. This research word was selected following a brainstorming session among the researchers; not all of their terms were used in this study. The top five Global Muslim Travel Index (GMTI) 2022 countries for OIC and non-OIC member countries were examined explicitly with reference to halal tourism [5]. Table 1 lists terms associated with halal tourism and the countries under study.

This study uses the Python 3.10 programming language, starting from the data collection stage to the analysis stage. Data collection is done by scraping Twitter data using the Snsrape package in Python. Snsrape is a scraping tool for social networking services (SNS). Snsrape collects things like users, user profiles, hashtags, searches, threads, list posts, and returned items found without using the Twitter API, so there’s no limit to the day and number of tweets retrieved. Furthermore, pre-processing is carried out on the data collected for later analysis.

Pre-processing in this study will clean the data from the noise that can interfere with the analysis. Data that contains a lot of noise will affect the quality of the analysis results, so pre-processing must be done to improve data quality. The pre-processing stages carried out in this study include:

1. Cleaning is the process of cleaning documents from words that are not needed to reduce noise in the classification process. Such as deleting URLs, usernames, and hashtags.
2. Case folding is the process of uniforming the shape of the letters and eliminating punctuation and numbers so that only letters between a to z are accepted. In this case, converting all words in the tweets to lowercase also removes the American Standard Code for Information Interchange (ASCII).

Table 1. Twitter keywords related to halal tourism and the countries studied

| Keywords | Country | |
|----------------------|-----------------------------|-----------------------|
| | OIC | Non-OIC |
| 1. Halal Tourism | 1. Malaysia | 1. Singapore |
| 2. Halal Destination | 2. Indonesia | 2. Taiwan |
| 3. Halal Trip | 3. Saudi Arabia | 3. Thailand |
| 4. Halal Food | 4. Turkey | 4. The United Kingdom |
| 5. Halal Travel | 5. The United Arab Emirates | 5. Hongkong |
| 6. Halal Hotel | | |

3. Stopword removal is the process of eliminating words that are not important in the classification process.
4. Duplicate removal is deleting the same tweet or retweet (RT).

To generate the sentiment of each tweet that is obtained, the open-source library, namely TextBlob, is used. TextBlob is very good at sentiment tweets using Natural Language Processing (NLP). By using this TextBlob, a polarity score will be generated which is worth between -1 to 1. If the score is getting closer to -1, it means that more negative sentiment is generated. Conversely, if the resulting score is more relative to 1, the more positive the resulting sentiment is. Then the subjectivity score is used to see how subjective the text of a tweet is.

4 Discussion

4.1 Halal Tourism Tweet Frequency Trends

Based on Fig. 1, we can see the trend of tweet data related to halal tourism from six keywords for each country. The volume of tweets for each year always increases at the end of the year. In most countries around the world, the volume of tweets rises at the end of the year along with holidays (school breaks, Christmas, and New Year's holidays) [21]. Therefore, the travel demand increased and created halal tourism tweets.

The highest number of tweets from 2016 to 2022 occurred in the middle of 2016. One of the factors that caused this phenomenon was the holding of the World Halal Tourism Award that year, starting with the voting period from October 24th until November 24th. Based on data scraping tweets that have been processed, many tweets were inviting them to vote in the categories nominated for the World Halal Tourism Award during that time. In addition, the contributor to tweets from 2016 was also caused by the Malaysia Thailand Food Festival (held from October 23rd–November 1st), as shown in Table 2. In addition, some other halal tourism-related events took place in 2016, including the Halal

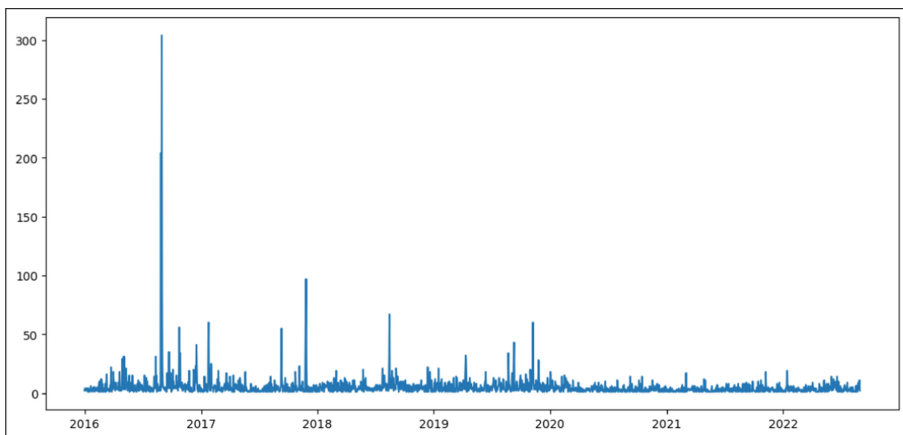


Fig. 1. Trend of Halal Tourism Tweets from January 2016 – August 2022

Table 2. Example of tweets in October–November 2016

| No | Tweet |
|----|--|
| 1. | let s vote aceh indonesia as world s best halal <u>cultural destination</u> |
| 2. | welcome world this is west sumatra indonesia we re ready for being world halal destination <u>ri</u> |
| 3. | uk is in the world s final for best emerging <u>halal destination let s win it by voting</u> |
| 4. | just posted a photo mathaf malaysia thailand <u>halal food festival</u> |

Tourism Conference in Turkey (3rd–5th May), Halal Expo Japan in Tokyo (22nd–23rd November), and the Halal in Travel-Asia Summit in Singapore (October 19th).

Of 2,709 tweets throughout 2016, there were 1,140 tweets containing halal food. The content of tweets related to halal food is dominated by tweets from Malaysia, a country with a Muslim majority. Surprisingly, Korea also appeared in tweets related to halal food that year. Besides, Japan is also a country that has surprisingly emerged this year. Based on the results of scraping tweets, in 2016, Japan paid attention to halal food along with many complaints regarding the availability of halal food in Japan. Some of the tweets mentioning Korea and Japan in the Halal Food topic are shown in Table 3.

In Figure 1, the number of tweets decreased from 2016 to 2022. The number of tweets increased in 2019 and dropped again in early 2020. It was due to the Covid-19 pandemic, which caused a shift in the trend of issues. During the Covid-19 pandemic, several countries implemented lockdown policies, which decreased the number of tourists. GMTI Report by Mastercard- CrescentRating has noted a decrease in International Muslim traveler arrivals from 160 million in 2019 to 42 million in 2020 and 26 million in 2021

Table 3. Examples of tweets about Halal Food Korea and Japan

| No | Tweet |
|----|--|
| 1. | tbh korean handle halal market better than us they even came to malaysia to learn about halal food the way they treat people eating <u>halal</u> |
| 2. | how s the halal food in korea is it taste diff <u>than malaysia i just eat can t be choosy</u> |
| 3. | korea opens food trade office in uae aims for growth the halal food market has been <u>growing fast recen</u> |
| 4. | free seminar in singapore what to know about <u>travelling and halal food in japan</u> |
| 5. | fyi japan s now promoting its halal tourism while in indonesia we re still fighting on kafir <u>and halal</u> |
| 6. | u can opt for other disney world like hongkong japan paris hongkong even provide <u>halal food</u> |

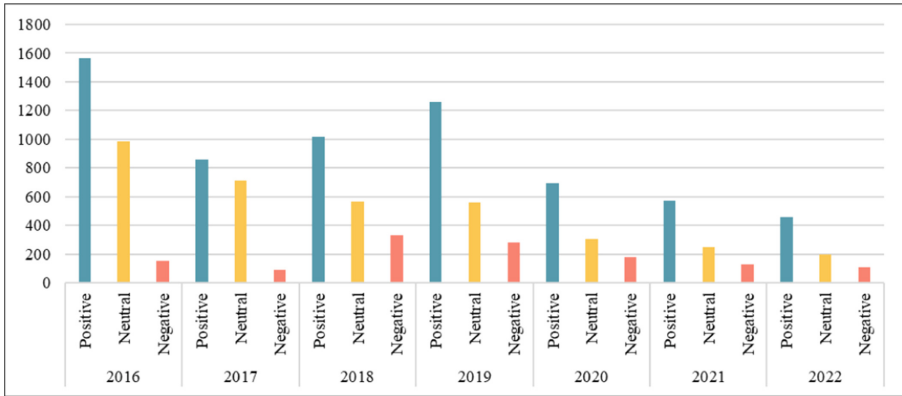


Fig. 2. Sentiment of Halal Tourism tweets from January 2016 – August 2022

[5]. As the pandemic had a colossal impact on the travel sector, more than 90 percent of these trips were performed in the first quarter of 2020 before most destinations closed their borders. In 2020, most countries around the world implemented a lockdown policy. One of the policies is to close the access to enter the country. The lockdown policy hugely impacted the tourism sector, which declined drastically that year. The Oxford Coronavirus Government Response Tracker (OxCGRT) [22] published that most countries around the world implemented a lockdown policy in the government response to the Covid-19 pandemic, the only difference being the level of leniency for each country.

Based on the graph in Fig. 2, the tweets with positive and negative sentiments have the same pattern. The number of tweets with positive and negative sentiment declined until 2017, then went up for two consecutive years. Then it dropped back to August 2022. The tweets show a different pattern with a neutral sentiment that continued declining from 2016 to 2022. Figure 2 also shows a higher level of neutral response than a negative one. The high number of neutral tweets obtained not only from those who stated whether they were pro or con against an issue but also from many other public reactions, such as their knowledge, expectations, or general opinions [23].

Figure 2 also found that tweets with positive sentiment have a more dominant movement than negative sentiment, showing that people welcome the discourse related to halal tourism. All those regions had realized Halal Tourism's potential as the tourism industry's attraction [24]. Some countries have started providing Halal tourism facilities and need such as Halal food, prayer facilities, Ramadhan services, and water-friendly washroom.

4.2 Halal Tourism in OIC and Non-OIC Country

Figure 3 shows the number of tweets related to Halal Tourism in OIC and non-OIC countries. The highest number of tweets for OIC countries is Malaysia, which has 2,057 tweets, and non-OIC countries, the United Kingdom, which has 2,807 tweets. There are several possible causes for many tweets from these countries, including the use of English in the two countries that tends to be dominant. It is not surprising considering that the

United Kingdom is in the Top 10 Countries’ Most Popular with Tourists, according to the World Population Review [25]. As mentioned in [25], the capital of England, London, attracts tourists with a wide variety of destinations such as Big Ben, Westminster Abbey, the changing of the guard at Buckingham Palace, and the British Museum. In addition to the UK, the United Kingdom includes three other countries. First is Scotland, with its capital city of Edinburgh, gloomy Loch Ness and Inverness, picturesque highlands, and St. Historic Andrews. Next is Wales and its castles, sights, and the capital city of Cardiff. Finally, Northern Ireland has Belfast’s bubbling nightlife, the valleys and coastline of Antrim, and one of Europe’s most fascinating natural wonders: the Giant’s Causeway.

Figure 4 shows a sentiment analysis of OIC and non-OIC countries. Positive tweets dominate negative tweets. Based on Fig. 4, the number of tweets for OIC countries tends to be more than for non-OIC countries. However, the difference in the number of tweets is only 276 or 5.01 percent. It shows that public enthusiasm for non-OIC countries is similar to OIC countries. In addition to non-OIC countries, they also pay attention to the development of halal tourism, even though it is not a country with a majority Muslim population.

Tweets with neutral sentiment also dominate for OIC and non-OIC countries. Many tweets containing general information, tour package promotions, or unrelated information scored neutral. Table 4 shows the Tweets with the neutral sentiment.

The research found that of the 663 tweets that had negative sentiments in non-OIC countries, 531 tweets related to halal food. Meanwhile, 371 out of 611 tweets had negative sentiments about halal food in OIC countries. It is shown by the words “chicken”, “eat”, “serve”, and “restaurant” in the world cloud in Fig. 6. Non-OIC countries still need help finding halal food, limited variety, and high prices. Some tweets that have negative sentiments related to halal food in non-OIC countries are listed in Table 5. People find it difficult to get lawful food due to mixing haram products or slaughter that is not in accordance with religion [26].

Figures 5 and 6 show the word cloud for words that often appear in tweets with positive and negative sentiments. We can see that “Muslim” often appears in tweets with positive or negative sentiments. Like negative sentiment tweets, halal food still dominates the topic in positive sentiment tweets. From 3,294 positive sentiment tweets,

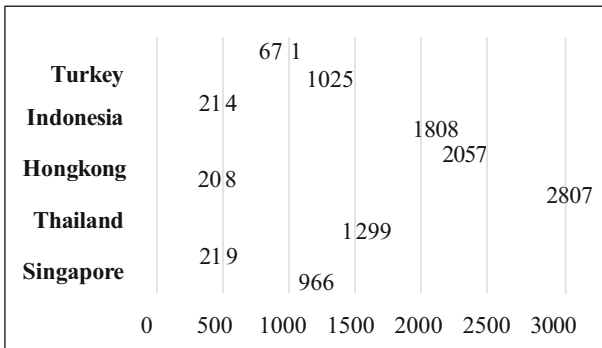


Fig. 3. Number of tweets by country

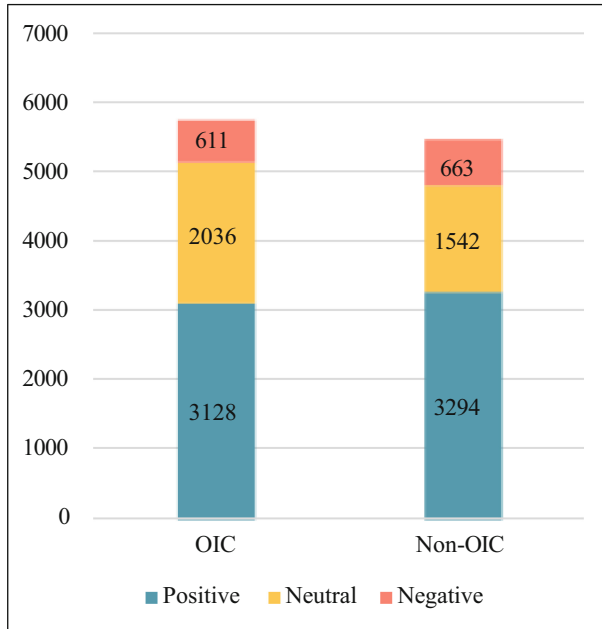


Fig. 4. Sentiment in OIC and Non-OIC Countries

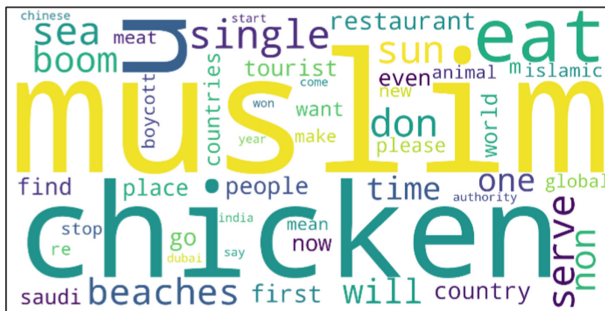
Table 4. Examples of neutral sentiment tweets

| No | Tweet |
|----|---|
| 1. | any plans for the weekend yet let balqis |
| 2. | join us at the next stop for halal in travel |
| 3. | uae halal tourism market set to grow with percent read blog |
| 4. | and held a joint virtual webinar today on halal certification to explore future business opportunities and the supply of halal products to the they alsodiscussed ways to increase the supply of halal food products in islamic markets |
| 5. | planning your staycation check out these boutique and designer hotels that are so aesthetic they ll have you snapping away some for instagram read it on our blog |

there were 2,081 tweets related to halal food. Many words indicate it related to food, such as “restaurant”, “eat”, and “certified”. It shows that one aspect of halal tourism, namely halal food, is a topic that is closely and widely discussed. In addition, many other words appear, such as “festival” and “holiday”.

Table 5. Example of negative sentiment tweets about halal food in the non-OIC country.

| No | Tweet |
|----|--|
| 1. | your university in the middle of nowhere in multiracial singapore has limited halal food options |
| 2. | i don t know why it s so easy to find halal food in singapore now all outlets here are halal but the price is expensive because a |
| 3. | my parents are concerned about my wellbeing in taiwan in bandung tbhhahal food in taiwan is alot harder to find but yea sevel is really helpful at least |
| 4. | last year they went to taiwan despite knowing that its kinda hard to get halal food over there |
| 5. | finding halal food in thailand harder than finding nemo |

**Fig. 5.** Word cloud for tweets with positive sentiment**Fig. 6.** Word cloud for tweets with negative sentiment

5 Conclusion

Halal tourism has become a lively conversation with various events in several countries, both OIC and non- OIC countries. The results showed a high spike in the number of tweets when there was an event to see the country with the best development of halal tourism. This paper also finds no significant gap in the number of tweets between OIC and non-OIC countries. The enthusiasm for halal tourism in non-OIC and OIC countries is the same. Sentiment analysis results also show no significant difference in negative or positive sentiment for both OIC and Non-OIC countries. The development of the halal sector has good potential in various countries. This study found that halal food is the most widely discussed topic related to halal tourism for both OIC and non-OIC countries.

This study still has limitations related to the specific topics found from text mining results, namely only looking at the tendency of the number of tweets and the sentiment of each tweet in general. For the subsequent research, we recommend adding topic modeling for grouping the topic discussed.

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