

ELECTRONIC WORD-OF MOUTH (E-WOM) SENTIMENT ANALYSIS ON HALAL CERTIFIED FOOD PRODUCTS

Analisis Sentimen *Electronic Word-of-Mouth (E-WOM)* pada Produk Pangan Tersertifikasi Halal

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ABSTRACT

Halal certification is a must-have for food companies in Indonesia because it affects buying interest. This study aims to analyze E-WOM's (Electronic Word of Mouth) sentiment related to public opinion on halal food products. The research focuses on developing and implementing a pre-process measurement model of sentiment analysis and assigning a perception value to halal-certified food products from E-WOM. We used a vocabulary approach with R studio software to measure the sentiment analysis method. The results showed that halal food producers can apply sentiment analysis measurements to halal-certified food products. Consumer sentiment content in e-WOM, positive and negative, impacts product image and purchasing decisions. The analysis of this study is negative because people tend not to express their opinions about some products that have been certified halal. In addition, through sentiment analysis, manufacturers can identify product elements that match consumer expectations, including the emotions in their comments. Manufacturers can also make improvements or improve product quality to be more competitive in the market. The sentiment analysis results can be a reference for designing effective communication strategies or strengthening marketing information messages. Producers could implement information technology-based innovations emphasizing transparency in the halal supply chain.

Keywords: halal, certification, sentiment analysis, word of mouth

ABSTRAK

Sertifikasi halal merupakan hal yang wajib dimiliki oleh perusahaan makanan di Indonesia karena hal ini mempengaruhi minat beli. Penelitian ini bertujuan untuk menganalisis sentimen E-WOM (Electronic Word of Mouth) terkait opini masyarakat terhadap produk makanan halal. Penelitian ini berfokus pada pengembangan dan implementasi model pengukuran pra-proses analisis sentimen dan pemberian nilai persepsi terhadap produk makanan bersertifikat halal dari E-WOM. Metode analisis sentimen yang digunakan yaitu berdasarkan pendekatan kosakata dengan menggunakan software R studio. Hasil Penelitian menunjukkan bahwa produsen dapat melakukan analisis sentimen pada produk makanan bersertifikat halal. Muatan sentiment konsumen dalam bentuk e-WOM, baik positif maupun negatif, memiliki dampak terhadap citra produk dan keputusan pembelian. Analisis dari penelitian ini bersifat negatif karena orang cenderung tidak mengutarakan pendapatnya tentang beberapa produk yang telah bersertifikat halal. Disamping itu, melalui analisis sentimen produsen dapat mengidentifikasi elemen produk yang sesuai dengan harapan konsumen termasuk emosi yang terkandung dalam komentar mereka. Produsen juga dapat melakukan perbaikan atau peningkatan kualitas produk agar lebih kompetitif di pasar. Hasil analisis sentiment juga dapat menjadi acuan untuk merancang strategi komunikasi efektif atau bahkan memperkuat pesan informasi pemasaran. Inovasi berbasis teknologi informasi dapat dipraktikkan oleh produsen untuk mendukung transparansi rantai pasokan halal.

Kata kunci: makanan halal, sertifikasi, analisis sentiment

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INTRODUCTION

Halal is one of the assessments in choosing a food product that is highly considered in purchasing, especially for Muslims. Indonesia is one of the countries where most of the population is Muslim, so the halalness of a product is highly emphasized to prevent the circulation of products, food, drinks, and cosmetics, that contain haram and dangerous elements. Halal certification is a very influential product guarantee that every food company in Indonesia must have. According to research by Waskito (2015), halal certification positively affects purchase intention. Thus indirectly, the halal certification has a real influence on buying a product.

Halal food inspection examines additional conditions, auxiliary materials, production processes, production personnel and equipment, halal management systems, and other matters related directly or indirectly to halal food production activities (Waskito, 2015). Halal products meet the requirements of halal in Islamic law (Burhanuddin, 2011), including (1) not containing pork and ingredients derived from pork and (2) not containing prohibited substances such as those derived from human organs, blood, and dirt. (3) According to Islamic law, all ingredients come from halal animals slaughtered. (4) All storage, selling, processing, and transportation areas may not be used for pigs. If it has ever been used for pork or other non-halal goods, it must first be cleaned according to procedures regulated according to Islamic law. (5) all non-pregnant foods and drinks hamper.

WOM (word of mouth), or word of mouth marketing, is one marketing method that has always been an exciting topic. WOM online is a WOM process using internet media. WOM can provide valuable input for a brand because WOM is the most honest and candid opinion from consumers. Ease of internet access, especially social media, can change the WOM marketing system into E-WOM (Electronic Word Of Month). E-WOM is a positive or negative statement made by potential customers, actual and former customers, about a product or company via the Internet (Hennig-Thurau et al., 2004). E-WOM can shape consumer opinions about halal products (Herindar & Haidar 2024). Customers use social media to share their own experiences with a brand, product, or service that they have experienced for themselves. E-WOM (electronic word of mouth) enables consumers to freely interact and comment online on a variety of items, sharing their impact on why people buy things (Musa et al., 2022). In the halal food market, where products must meet strict halal standards, consumers rely heavily on the experience and opinions of others to ensure that the products they choose meet halal criteria. Consumers also take advantage of other people's experiences before buying a good or service (Evans and McKee, 2010). Activities in E-WOM transform consumers in obtaining a high level of market transparency. Consumers have a more active role in the value chain cycle so that consumers can influence products and prices based on individual preferences (Evans and McKee, 2010).

Halal food manufacturers must utilize e-WOM to differentiate their products from competitors. Therefore, the e-WOM analysis provides insights into how the halal market receives halal products and how manufacturers can adjust their marketing strategies to increase product attractiveness. The halal food market is particularly vulnerable to misinformation and misperceptions about the halalness of products. e-WOM can exacerbate the image crisis if halal products receive negative reviews related to their halalness or quality. Therefore, manufacturers need to monitor and analyze e-WOM to respond quickly to negative sentiments by clarifying or fixing existing problems (Hamdan & Mahaputra, 2024). The existence of E-WOM needs to be of concern to producers in order to understand consumer sentiment formed through online reviews and discussions. The validity and quality of information received in the growing global halal market influence consumer trust in products. E-WOM analysis is crucial to monitor and evaluate consumer perceptions of halal products. The existence of social media and digital platforms can accelerate the spread of consumer

opinions, both positive and negative, thus posing a challenge for companies to maintain their brand image and help companies understand market reactions (Rahim et al., 2022). Companies need to respond appropriately to the growing sentiment to remain competitive and maintain the reputation of halal products through clarifying information or proactive communication strategies as a form of crisis management and developing more targeted marketing strategies. This confirms that e-WOM is an important tool in strengthening the image of "halal-certified" and increasing trust (Rosyid et al., 2023).

Honest and open statements on social media can affect public acceptance, resulting in interest in buying a product. Positive statements about a product on social media can be a reference in recommending a product. These social media contents become one of the references used to decide to buy the product or service. On social media, usually, family relationships, kinship, and friendships are the triggers for E-WOM to occur. Based on research from Salim and Ma'arif (2024) that focused on halal products, product halalness is central to the conversation on social media and perhaps the most significant differentiating factor for consumers. There was some misunderstanding from public opinion about halal products and several negative issues about the Indonesian halal policy represented by the Indonesian government's halal product guarantee law. Specifically, we need to evaluate the public sentiment about food products that are certified halal to determine their opinions.

Sentiment analysis is a part of opinion mining (Liu, 2012). In sentiment analysis, there is a process of understanding, extracting, and processing the data obtained automatically to obtain information (Pang and Lee, 2008). Sentiment analysis or opinion mining refers to the broad field of natural language processing, linguistics, and computation-text mining, which aims to analyze opinions, sentiments, evaluations, attitudes, judgments, and emotions of a person, whether the speaker or writer is concerned with a particular topic, product, service, organization, individual or activity (Liu, 2010). Sentiment analysis is a textual data classification process, but in reality, sentiment analysis is more challenging than the usual textual classification process. Sentiment analysis is related to the use of language (Liu, 2010).

The task of sentiment analysis is to classify text in a sentence to determine whether the opinion expressed in the sentence or document is positive, negative, or neutral. Sentiment analysis can also express emotional feelings of sadness, joy, or anger. Sentiment analysis is carried out to get opinions on an issue, or it can also be used as material to identify trends in things that are currently happening. In the business world, sentiment analysis is used to monitor a product quickly by using tools to see the public's response to the product being analyzed.

Positive or negative statements on E-WOM can be analyzed using sentiment analysis. Sentiment analysis is a computational study of people's opinions, sentiments, and emotions through their entities and attributes expressed in the text (Liu, 2012). Sentiment analysis will categorize the polarity of the text in a sentence or document to determine whether the opinion expressed in the sentence or document is positive, negative, or neutral (Pang and Lee, 2008). Therefore this study intends to analyze E-WOM regarding product halalness. E-WOM sentiment analysis on halal-certified products is needed to determine the public's positive or negative opinion regarding halal-certified food products so that we can quantitatively measure the opinion of halal-certified food products as positive or negative. In general, this study aims to analyze E-WOM sentiment on halal-certified products. Specifically, this research aims to develop and apply pre-process sentiment measurement for E-WOM food products. Besides, this research wants to measure the sentiment value of E-WOM halal-certified food products.

Several previous studies have been conducted on sentiment analysis of text data from social media. For instance, the Fauzy et al. (2023) survey uses the Support Vector Machine (SVM) algorithm to analyze positive and negative sentiment from tweets about food trends. Other research related sentiment analysis was conducted to evaluate performance of

shopeefood services using Naïve Bayes Classifier. The research also compared supervised machine learning methods such as KNN, SVM, and Decision Tree (Mufidah et al., 2022). Naïve Bayes method was also used to classify the sentiment analysis from social media X about traditional and international food and sweet food or food with sugar ingredients in Indonesia (Berutu, 2022; Murnastiti et al., 2025). For strategic purposes, research about sentiment analysis was used to evaluate the competitor of restaurant business based on positive and negative comment on intagram account. The sentiment classification was used to recognize the negative comments as weaknesses and positive comments as strengths, with an accuracy of 85% and a precision value of 79 % (Flores et al., 2020). Based on the literature review, no research used sentiment analysis to evaluate public sentiment on social media about halal food. Thus, we proposed research about halal food for several types of halal food providers such as restaurants, bakeries, and fast food.

MATERIAL AND METHOD

Lexicon Based is a sentiment analysis method based on assessing the arrangement of words that make up a document based on a dictionary, whether positive or negative. According to (Liu, 2010), opinion words are also known as opinion words or sentiment words in the research literature. Examples of positive opinion words: are beautiful, beautiful, good, and excellent—examples of negative opinions of bad, poor, and terrible words. Apart from individual words, there are also opinionated phrases and idioms, for example, costing someone an arm and a leg. Collectively, they are called the opinion lexicon. They play a role in sentiment analysis for obvious reasons. Lexicon-based is a method of sentiment analysis by using a dictionary as a language or lexical source (Dang, Zhang, and Chen, 2010). Classification of lexicon based on the formula:

If $\sum D \text{ score } (D) > 0$ then it is positive

If $\sum D \text{ score } (D) < 0$ then it is negative (1)

If $\sum D \text{ score } (D) = 0$ then it is neutral.

3.1 Data Collection Techniques

The data used is data obtained from Twitter social media. Data retrieval uses an authenticated R program with data API (Application Program Interface). Data retrieval is carried out using keywords divided into three categories based on food products that have been halal certified, including bakery, fast food, and restaurant.

3.2 Place and Time of Research

This research was conducted at the System Engineering and Industrial Management Laboratory of Djuanda University, Bogor. Data was collected from June to September 2024 for 1,000 tweets each for three categories of food data from social media X.

3.3 Analysis Used

Data analysis is used data analysis with polarity scoring method. The data obtained will be expressed with positive, negative, or neutral opinion values. Sentiment weighting is obtained using a corpus-based lexicon approach. The data obtained in the document matrix is matched to the corpus, which has been divided into positive or negative corpus so that each document can be extracted and assigned a positive or negative value.

3.4 Research Stage

The stages of research that will be carried out include:

a. Data collection

The data collection stage is carried out by utilizing Twitter's API (Application Programming Interface). API is an application provided by Twitter that allows third

parties to obtain or collect data on Twitter. Data collection begins with the registration process. Then, we will get an API Key, API Secret, Access Token, and Access Token Secret, which can authenticate and retrieve data based on the required keywords using the R studio software.

b. Pre-process

At this stage, the processing of the tweet data that has been obtained will be carried out into the steps taken, including:

1. Elimination
The tweet data obtained will be deleted from retweets, user IDs, punctuation, numbers, and Web links.
2. Stopwords
Stopwords are omitting words that contribute little to the document's contents.
3. Steaming
Steaming is the process of returning a suffix to make a base word.
4. Normalization
Normalization is the stage that produces documents that have gone through the deletion process, stopwords, and steaming.

The data was collected from every single X account that posted a tweet about restaurants, bakeries, and fast food. We did not collect any specific user account from social media X for the text data. The text data retrieved from tweets was the text inserting halal words.

3.5 Sentiment analysis process

At this stage, documents that have gone through the pre-processing stage will immediately calculate their sentiment value using the lexicon-based method. Text mining is done by analyzing the words in each tweet data based on the corpus, which consists of the positive and negative corpus. Every word that makes up the document is scanned by corpus. Each word is worth 1 for positive words and -1 for negative words. Data that has gone through the mining stage will calculate the total value of each document. As we know, there are many types of food products. We chose this food category based on its complexity, the highest critical point of halalness, and the most popular brand on social media (Sugoi, 2023).

RESULT AND DISCUSSION

4.1 Data Crawling Stage

The desired amount of data when crawling data is 1000 tweets with keywords divided into three categories. The keywords used are halal-certified products, according to the Indonesian Ulema Council. The keywords used are shown in Table 1.

Keywords are words that are searched for when crawling data. Crawling data is done after connecting with the API until the code used for authentication is obtained. Crawling data is done using the R program application. The results obtained when crawling data are shown in Figure 1.

Figure 1 shows a difference in the number of tweets obtained, and the time the tweets were obtained. When doing crawl data, the difference in the number of tweets and the acquisition time depends on the number of tweets disclosed by the public regarding the keywords they seek. Twitter social media displays tweet data within ten days, so community E-WOM is very influential in the results. An increase in keyword search intensity can lead to a decrease in search time intensity.

Table 1. Keywords

Category	Code	Keywords
<i>Bakery</i>	B1	Sariroti
	B2	Dunkin Donut's
	B3	Breadlife
	B4	Roti Boy's
<i>Fast food</i>	F1	KFC
	F2	McDonald's
	F3	A&W
	F4	Pizza Hut
Restaurant	R1	Solaria
	R2	Bakmi GM
	R3	Yoshinoya
	R4	Marugame Udon

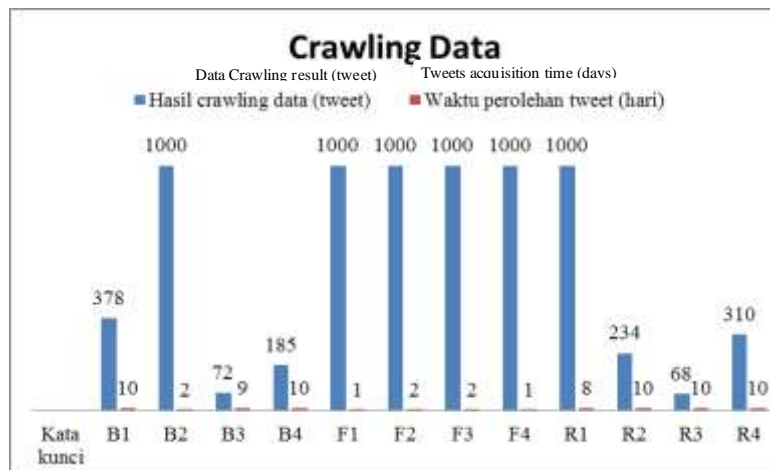


Figure 1. Crawling Data Results

Community talk about a product is generally influenced by the brand or the product brand itself. According to (Semuel and Lianto, 2014), E-WOM positively affects brands, so E-WOM and brands are interconnected. The number of people talking about a product will form the image that can affect the brand of the product itself. The brand is a valuable thing in the marketing concept. The strength of the community in remembering a brand can be an added value for companies to dominate the market. E-WOM is a force that influences the brand of a product.

In addition to the keywords listed in Table 3, crawling data is also carried out using the word "halal," for example, halal sari roti, halal solaria, and halal KFC. The results obtained for keywords using the word halal produce the amount of data which is generally less than five tweets and even 0 data. In research by Waskito (2015), halal labels affect buying decisions. Including the halal logo as a sign of product certification can increase public buying interest in the products created. In research conducted by Utami (2016), halal labels can directly provide information about the quality and quality of the product so that it influences people's buying interest. The large number of people who buy halal-certified products illustrates that people care about halal and shows that halal affect people's interests.

In the tweet data obtained, there are retweet data carried out by several accounts. According to Asanti (2015), E-WOM on Twitter and other social media can be done by retweeting the tweets delivered. The retweet results will appear on other consumers'

timelines so that both directly and indirectly will influence buying interest and be able to explore public perceptions about the benefits of social media Twitter and its limitations in making purchases of related products. The number of tweets obtained for each keyword illustrates the spread of E-WOM related to halal-certified food products.

Table 3. *Crawling Data Results*

Crawling Data Results
With Mahir At R
In the boarding house alone hungry, waiting for B
Dinner with family at F
Don't forget B nuts and chocolate
@WeGotLoves @Hanbeazt @ggendeukie darting
fun to choose. Let's buy B1 first?
Missing F with @Syazana_sz
Sharing together on F #pizza #F
#handsinframe https://t.co/8a0Wfh804Y

The results of the crawling data above are examples of tweets disclosed regarding the keywords being searched. Facts and promotional phrases, like the sentences above, fill almost a portion of the data obtained. When the verbal expression contains negative words that are more dominant even though it does not contain an opinion on the product, then the negative value will automatically dominate the sentiment analysis results. People are less likely to express opinions when they do not feel satisfied or dissatisfied.

4.2 *Pre-Process Levels and Results of Sentiment Analysis*

Sentiment analysis is performed on the results of crawling data. The data obtained were processed with the pre-processing stage and then analyzed using the corpus, as shown in Table 2. Sentiment analysis on halal-certified products produces the following sentiment percentages shown in Figure 2.

Table 2. Corpus used

corpus positive		negative corpus	
fragrant	hot	boycott	fat
favorite	hot cake	spicy	split
pleasure	hot cakes	sigh	unclear
economical	luxurious	very bad	bad taste
happy	high quality	expensive	shy
soft	wholeheartedly	hard	dripping
be thankful	exciting	bad	raw
gratitude	Can	Strange	weakness
grateful	can	strike	turn off
very satisfactory	Thank You	disabled	danger
satisfactory	surprise	fragile	rotten
Healthy	believe	broken	less
sincere	Hopefully	damaged	denounce
welcome	warmer	the country	contaminated
ensure	warmth	sour	Wrong

In the Figure 2, the results obtained tend to be negative. The high negative value in the analysis results can be caused by many things, including:

1. Few opinions were expressed on the results of crawling data.
2. People often comment more negatively than positively.
3. Negatives spread much faster.

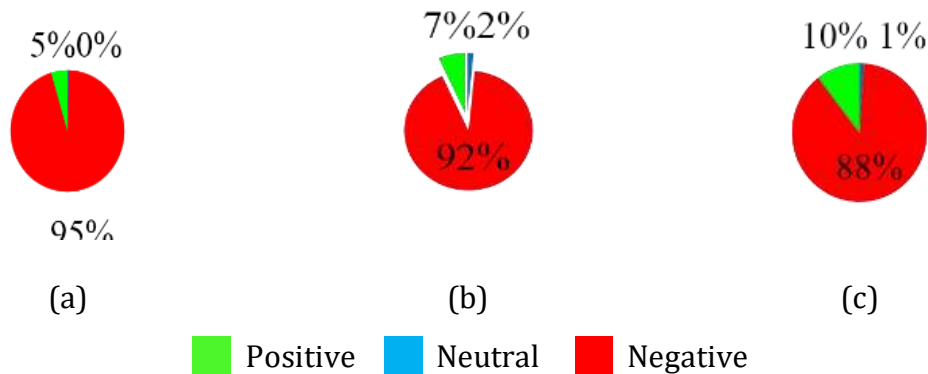


Figure 2. (a) Bakery; (b) Fastfood; (c) Restaurant Sentiment Value

In the early data collection stages, the results mostly revealed facts rather than opinions. On social media, most people prefer to express what they are doing with a product rather than having an opinion about the product they are using.

Table 4 is part of the sentiment assessment results. Negative sentiment scores dominate the sentiment results. Some results have different responses if we look at them without going through the sentiment analysis stage. These different responses occur due to reading errors with the analytical method used. This lexicon-based sentiment analysis method calculates the written value based on the arranged words so that the relationship of each word does not affect the sentiment value.

Someone feeling disappointed, sad, dissatisfied, hurt, and so on will often express more harmful than positive things. When people feel down, they can tweet more than 3 in an hour. Research conducted by Asanti (2015) strengthened the idea of high intention to tweet when people get hurt, which explains that satisfied consumers will only tell about five people about their satisfaction. Otherwise, if they are unsatisfied, they will speak to nine people about their dissatisfaction.

Expressions expressed when feeling disappointed can be sure to contain words with negative values such as sad, tiring, sick, stupid, and so on, allowing the number of negative tweets to dominate the sentiment analysis results. When crawling data for the bakery category, the results obtained are less than 1000, even though the data obtained is from the past ten days. In this incident, we concluded that people rarely talk about the product. When there was a case related to a statement made by the producer when the people in Indonesia were busy in a conflict that smelled of racism, the statement issued by the company was considered negative by the community and made the product have a negative value in the public eye. While social media can raise awareness of halal issues, misleading content can spread quickly and pose challenges in maintaining the credibility of the company's image. In addition, fake news can damage consumer perceptions, triggering distrust and negative images of halal brands or products, especially if consumers consider the news to be valid and by their religious values (Wisker, 2020).

The keyword for the bakery category for this product reached more than 3000 data within one day when social media users widely discussed the error statement. These data illustrate that something negative spreads far more quickly than positive. In the view of marketing, this is a crisis experienced by the company. The public's negative assessment of opinions in the eyes of society is a crisis for a company. Regardless of the product brand, the product's benefits, and the product's halal status, which, in general, the product cares about the beliefs

of Muslims, the public still evaluates this product negatively. Besides, social media can provide a wealth of information that can help find the truth or sometimes even be misleading. In addition to positive content, a lot of information creates misunderstandings, such as the case of pig DNA in Cadbury products in Malaysia. Posts on social media had a significant impact on the Muslim community, sparking concerns about the products they were consuming. These cases show how halal-related fake news can quickly spread when it offends the beliefs, morals, and values of the Muslim community (Adiani, 2024).

Public Relations crisis is often called a communication crisis. This crisis happened because of the negative news, which had a destructive impact on the company's business. Media reports or issues circulating may or may not be accurate but can potentially affect the image of a person or company (Purwaningwulan, 2013). The task of public relations is to clarify reports in the media that are unbalanced or discredit the company. A public relations crisis is an event, rumor, or information that has a negative impact on a company's reputation, image, and credibility.

Community E-WOM for a product has a considerable influence on the product itself. Someone will express an opinion when they feel satisfied or disappointed. According to Harsasi (2006), when viewed from its nature, word of mouth can be divided into two characteristics:

1. Negative word of mouth

It is a negative form of WOM that endangers the company's success. It is said to be dangerous because dissatisfied consumers will spread their dissatisfaction to others

2. Positive word of mouth

The opposite of negative WOM, positive WOM is beneficial for companies and has an impact and effect on consumer purchasing decisions.

Negative or positive e-WOM from the results of the analysis can have an impact on the continuity of the company. In the research conducted, the negative value of the results obtained does not have a negative impact on the company because most of the E-WOM disclosed by the public is not a negative opinion of the product. The negative sentiment value obtained will neither harm nor benefit producers.

Community E-WOM can provide immeasurable benefits for a product but can also destroy it. The number of positive E-WOMs disclosed by the public regarding a product will make the product more known and in great demand by the public. Community positive opinion can attract people's interest in the product. Positive e-WOM that someone expresses about a product can generate curiosity and a feeling of wanting to try it, which results in a purchase. Negative opinions expressed when someone feels disappointed can lead to destruction. Negative e-WOM harms the continuity of the company. Quality factors can cause a person's disappointment with a product, be it taste, safety, comfort, service, etcetera.

In the research conducted by Luthfia (2012), the variable that has the most significant influence is the product quality variable, with a regression coefficient of 0.374, followed by the price variable, with a regression coefficient of 0.331, which does not have a positive effect is the service quality variable with a regression coefficient of -0.028. Social media is used as a place to express what is felt. Negative things will be easily recognized and even remembered by many people. Negative news will spread faster and become more exciting things to discuss. Negative WOM has a more decisive influence than positive WOM. Consumers tend to believe negative WOM because of its risk-averse nature (Harsasi, 2006). The impact of negative E-WOM on a product will affect the image. Negative e-WOM will reduce people's buying interest in products. Declining public buying interest can reduce production figures and destroy companies.

4.3 Dealing with Sentiment Analysis Results

The results of the E-WOM sentiment analysis have a genuine impact on the company. The

value of positive and negative sentiment on the results of E-WOM both impact the company. Positive e-WOM can form public trust in products. Providing exciting information related to products can be used as a promotional event so that people are more familiar with the positive side of the product to form positive E-WOM. There are three sources where WOM comes from, namely (Harsasi, 2006):

1. Personal Sources

The confidential source includes friends, family, and co-workers. For example, when choosing a favorite restaurant, potential customers will ask friends or family which restaurant to recommend.

2. Expert Sources

It is required primarily for the purchase of services that require high involvement. Consumers will trust an expert who has information that is judged to be better than private information sources. For example, asking for an expert's opinion is necessary when hiring a lawyer. This source will be more valuable when consumers need more knowledge of the ideal service information they should get.

3. Derived Sources

Used in forming expectations and comes from a third source. An example is testimonials in advertisements that direct and convince other potential customers regarding the reliability of the products they consume.

The presence of the internet has changed the trading or sales system, which was initially only provided in the mainstream market (traditional market). It has now turned into an unlimited choice of catalogs available on the internet. Producers can use all three sources that makeup WOM to create positive E-WOM. Customer may immediately purchase after seeing an advertisement on the internet, or it could be that because they are interested in the uniqueness of a brand, someone immediately writes a testimonial on their blog (Hadi and Herawati, 2014).

Recommendations expressed by people closest to them, trusted people or opinions expressed by the public regarding a product can attract people's interest in buying or visiting. Studying consumer behavior enables marketers to predict how consumers will react to various messages conveyed by producers and to understand how they make purchasing decisions. The factors that influence the formation of attitudes include (Shinta, 2011):

- a. Personal experience
- b. Influence of family and friends
- c. Direct marketing
- d. Mass media
- e. Individual characteristics

Formation of positive E-WOM can be created to instill public memory of interest in buying products. Forming E-WOM by informing positive things makes it easier for people to remember products. Positive e-WOM can create success in new products. According to Shinta (2011), the success of new products can occur because:

- a. The product satisfies one or more market needs
- b. The product is technologically advanced and has an advantage over the competition
- c. Products match the functional strengths within the company, such as sales, distribution, and production
- d. The top management has a long-term involvement in new product development. Their experience increases performance in launching new products to the market
- e. The new product strategy is designed, and the products selected genuinely follow the company's strategic and market needs.
- f. Good management style and effective organization.

At point f, management by utilizing internet media and forming positive E-WOM can be used as an effective management style to attract public interest. E-WOM has positive and negative effects on companies. According to Antika and Andjarwati (2016), negative word of mouth is a phenomenon that companies or entrepreneurs fear most. The level of satisfaction of emotionally negative consumers will not only talk about those closest to them. Dissatisfaction is not necessarily from the physicality of a product or service, but it could be due to the facilities, service, and experience when making a purchase. Service actions toward consumer dissatisfaction can result in the behavior taken by consumers.

In the Figure 5, the actions of consumer dissatisfaction culminate in the consumer's decision to try again or not return. Negative e-WOM consumers express regarding a product allows producers to analyze the things that cause consumer dissatisfaction. Evaluating the results of E-WOM sentiment analysis can overcome the company's shortcomings that end in the improvement stage. Improvements can be made by identifying any negative opinions complained by the public who are the target of company improvements. Carefulness in handling public expressions in responding to complaints is vital in dealing with negative E-WOM.

Four essential aspects must always be considered in carrying out tips for handling customer complaints, namely (Shinta, 2011):

1. Empathy for angry customers
2. Speed in handling complaints
2. Fairness or fairness in solving complaints
3. Convenience for customers to contact the company.

Actions taken by consumers related to product satisfaction are divided into two things, including things that can be solved by the producer and things that the producer cannot solve. A public relations crisis is a crisis that is formed unexpectedly. The company's ability to regain public trust depends on the efforts made. Restoring public trust is the same as building trust from scratch with even more effort. Handling a public relations crisis can be done by rebuilding public trust through product introduction or promotion. According to Shinta (2011), the primary purpose of promotion is to inform, influence, persuade, and remind customers about the company and its marketing mix. Information about the product is expected to restore people's memories of the benefits and original purpose of making the product.

Electronic media can make it easier to do promotions. Displaying advertisements is expected to bring back people's memories regarding the benefits or advantages of the product. There are 12 pillars in marketing, namely (Waringin, 2008):

1. Public Relations, Publicity, or Press Release
2. Referral
3. Endorsement
4. Advertising
5. Direct Mail
6. Direct Sales
7. Direct Agent
8. Host Beneficiary
9. Telemarketing
10. Joint Venture
11. Giving Seminars
12. Canvassing / Booth

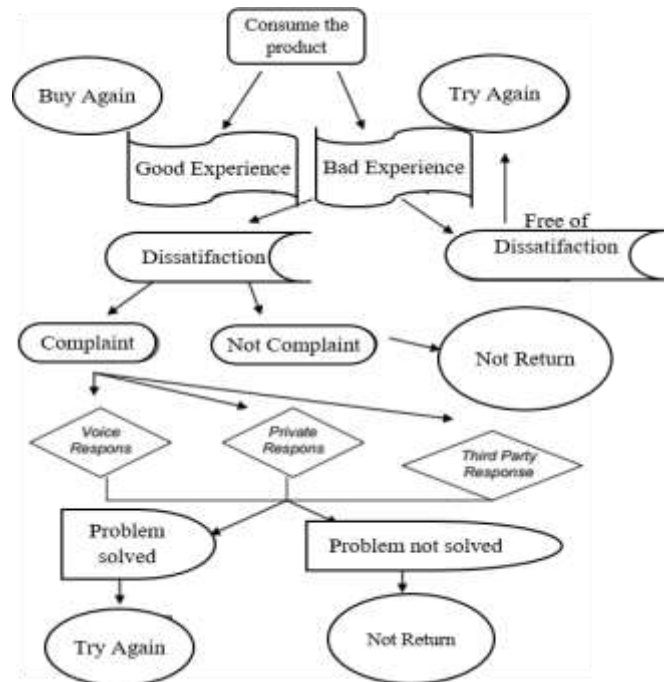


Figure 5. Customer actions towards products (Shinta, 2011)

All strategies can be used to increase promotion and restore public trust. Strategies that can be done to restore public trust include public relations and advertising strategies. Public relations are a means to create public awareness, which is very easy and can be done on various occasions (Waringin, 2008). Re-promotion in all media, such as television, radio, magazines, and other media, is expected to return positive E-WOM to society by creating relevant and positive news. Promoting on social media is also very helpful. Making a fan page or blog, or account will make it easier for the public to find information related to products. Account activity in serving public complaints and positive information disclosed regarding products is expected to restore public trust.

CONCLUSION

Sentiment analysis could determine whether a person's opinion on a topic is positive or negative. Food Producers can apply sentiment analysis to measure the value of community E-WOM for halal-certified food products. Halal certification eliminates public doubts regarding product halalness. The negative sentiment results in this study do not illustrate that halal-certified products are negative because, from the data obtained, there is E-WOM, which has a negative value but has nothing to do with opinions on halal-certified food products, so the resulting sentiment value is not considered negative E-WOM. The data shows a discrepancy between E-WOM expressions and the sentiment analysis results. The discrepancy can occur due to errors in reading the system and the completeness of the corpus used. E-WOM data that does not contain many expressions related to halal-certified food products shows that people tend to express fewer opinions regarding products. Generally, people will express opinions when they feel satisfied or dissatisfied with a product. Besides, to handle sentiment crisis from public opinion, manufacturers are advised to immediately respond to negative sentiment with an open and education-based communication strategy regarding the halal product process, as well as continuous innovation in quality and halal certification, to restore consumer confidence and strengthen a positive image on social media. Developing product innovations emphasizing halal supply chain transparency through information technology is also the best option. By implementing such innovations, Producers respond to criticism from e-WOM and build long-term trust and credibility, which is crucial in the face of dynamic opinions on social media.

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