

An Exploratory of Sentiment Analysis on e-Commerce Business Platform: Shopee Malaysia

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ABSTRACT

The social media landscape creates opportunities for businesses to gain insights into public opinions about the brand, products and services issues discussed online. This research focuses on analysing public opinion on Twitter (currently rebranding to 'X') using Nvivo software. A qualitative technique was used to perform sentiment and content analyses on data gathered on 29 November 2021 concerning one of the top E-commerce business platforms in Malaysia, Shopee. In sentiment analysis, the cases of "Very Negative", "Moderately Negative", "Moderately Positive" and "Very Positive" were to be established. There are 3261 comments; 284 tweets have been coded as very negative, 122 as moderately negative, 412 as moderately positive, and 2443 as very positive. There are seven themes of the topic that emerged within the positive sentiment group: Customer satisfaction, customer service, delivery service, giveaway, promotion, seller satisfaction and socialising. Five themes for the negative sentiment group are identified: apps service, customer satisfaction, customer service, delivery service, and seller satisfaction. These findings will assist Shopee in determining what is effective and what is not. The findings add to the knowledge of e-commerce business platforms. It presents an overview of the public perspective for e-commerce businesses to understand the strengths and weaknesses of their services and react swiftly to customer demands.

Keywords: *Sentiment analysis, Shopee, e-commerce, Twitter, Nvivo.*

INTRODUCTION

In Malaysia's enormous population of about 32 million people, around 26 million are actively using social media, and almost half are technologically savvy consumers aged 18 to 54 (Digital Business Lab, 2022). Furthermore, 92.5% of Malaysians often searched online for a product or service, and 70.4% made a purchase or ordered goods or services via e-commerce (Department of Statistics Malaysia, 2023). Due to the higher social media penetration rate, Malaysia is one of the world's top markets for e-commerce adoption, with a high possibility of social media users becoming paying consumers. In addition, more than eight in ten Malaysians use social media for product, service recommendations, and reviews (Department of Statistics Malaysia, 2021a). Moreover, around seven out of ten people believe they buy things online after seeing them on social media (Department of Statistics Malaysia, 2021b). Therefore, exploring the sentiment shared on Twitter about Shopee Malaysia as positive or negative is important.

An e-commerce platform is online shopping that brings together the consumer and the seller so that each may act out their respective roles in the transaction. For example, a consumer should be able to use an e-commerce platform to find products, browse around using a cart, and then check out of the site in order to fulfil their shopping needs. On the

other hand, e-commerce platforms allow sellers to create their own independent online shops and get visibility in marketplaces (Eni et al., 2020).

Consumer understanding has always been a priority for companies, and sentiment analysis is used to monitor those emotions through opinion mining on consumer reviews from social media (Marong et al., 2020). According to research, buyers carefully analyse online product reviews, comments, and pertinent information before buying any product or service. (Boccali et al., 2022; Nor Amira & Mohammad, 2020; Raji et al., 2018; Romyeni et al., 2023). Organisations and businesses constantly seek customer or public feedback and opinions on their products and services to be processed and transformed into valuable information that may benefit most strategic operations (Alessa et al., 2021).

The evolution of social media adoption enables an environment in which individuals may express their ideas, suggestions, and innovations through interaction and disclosure. Therefore, social media platforms help extract data for sentiment analysis. Sentiment analysis applied in this research is an approach that uses Natural Language Processing (NLP) to extract, convert, and interpret opinions from a text and classify them into positive, negative, or neutral sentiments (Liu, 2022; Agarwal et al., 2015). In the field of sentiment analysis, appraisals, people's opinions, sentiments, judgements, emotions, and attitudes towards entities such as products, services, individuals and organisations are investigated (Shivaprasad & Shetty, 2017). In addition, it is an opportunity for companies to recognise their brand. Thus, sentiment analysis plays a vital part in the relationship between the brand and the user by reflecting on their experiences (Zhao et al., 2016). Generally, sentiment analysis aims to determine customer opinion or attitude toward a particular topic or the piece's overall contextual polarity.

Sentiment analysis, often known as opinion mining, is a method of locating and categorising subjective viewpoints in source materials by combining natural language processing, computational linguistics, and text analytics (Zaki & McColl-Kennedy, 2020). Sentiment analysis gives an in-depth understanding of the current situation and structured planning based on customer opinions and feedback, satisfaction, and needs of customers. This approach may be used to get an insight into the feelings and attitudes of people on the Internet, and the text can be classified into positive (happy), neutral (emotionless), or negative (unhappy) (Sharma & Ghose, 2020), it is done to measure the performance of various brands and products. This data can be used in practical applications to discover useful information to enhance customer experience and company strategic direction since it allows them to monitor product or service perception, brand loyalty, and reputation management (Noor Alyani & Maslina, 2020; Widarto et al., 2021).

A considerable number of academic studies have included sentiment analysis as a crucial element in their study of Twitter data, focusing on various industries like retail (Ibrahim & Wang, 2019), banking (Pejić Bach et al., 2019), and e-commerce platform (Gajbhiye & Gupta, 2020). According to Rane and Kumar (2018), Twitter data is considered a dependable source of information due to the fact that users express their own emotions and provide feedback, hence providing it useful for research purposes. According to Sayce (2022), the number of daily tweets exceeded 500 million as of August 2022. Additionally, Statista (2023) reported that there were 368 million active Twitter users worldwide. Moreover, a significant proportion of users, specifically 89%, employ Twitter to discover new products or services. Additionally, a substantial 76% of users assert that they have made purchases as a consequence of engaging in conversations on Twitter.

The main purposes of this study are as follows:

- To identify the sentiment of Twitter users towards Shopee Malaysia.
- To determine the topics Twitter users discuss on Shopee Malaysia.

LITERATURE REVIEW

Shopee

Shopee is an online marketplace connecting sellers with buyers who want to purchase products in several categories and has grown to become one of Southeast Asia's largest online marketplaces (Pratmanto et al., 2020). It delivers a quick, simple, secure selling experience and purchasing for both retailers and customers. Shopee was launched in seven markets across Singapore, Indonesia, Malaysia, Thailand, Taiwan, Vietnam, and the Philippines in 2015 (Saieed, 2021). It has expanded its reach and serves consumers and sellers throughout Southeast Asia, East Asia, Europe, and Latin America. Shopee was also the third most downloaded shopping app worldwide in 2020. In addition, Shopee was named first in YouGov's "Best APAC Buzz Rankings 2020" and ninth in the "Best Global Brands 2020" rankings (SEA Group, 2021).

Shopee Malaysia is one of the most popular e-commerce platforms in Malaysia, along with Lazada. As of the second quarter of 2021, Shopee led the Malaysian e-commerce market as the most clicked e-commerce site in the country (Degenhard, 2021). Shopee Malaysia has its branding page created on various social media such as Facebook, Twitter, and Instagram. Thus, many customers are able to deliver their perspectives, opinions, or satisfaction with the brand through social media platforms. The amount of activeness of the users on social media is also numerous, so conducting an analysis will be essential in understanding people's perception of Shopee. The sentiment classification aims to categorise user reviews as positive or negative emotions.

Due to the accessibility of social media platforms, consumers in large numbers rely more on reviews and opinions expressed and posted by other users on the Internet rather than the marketing done by the company (Mittal et al., 2016; Shankar et al., 2022). These online sentiments matter to both consumers and businesses. In addition, the customer review of electronic word-of-mouth (eWOM) has been found to have a positive and significant impact on consumers' intention to repurchase in e-commerce platforms (Mahendra & Mugiono, 2022). Therefore, sentiment analysis is vital for marketers to get immediate feedback on their goods or services and help them strategise their marketing activities.

Twitter

Twitter, currently rebranding to X, is an online social media and social networking service where users may interact in short messages known as tweets (Iqbal, 2023). The number of users in Malaysia is projected to reach 5.68 million users by 2025 (Statista, 2021). Data from Twitter are gathered as a result of #hashtags to access a specific tweet related to that topic, and a list of tweets will pop up from various users (Alwalmani et al., 2018). Through Twitter data mining, a vast number of tweets from different social and interest groups can be collected. The data collected from Twitter mining are beneficial to understanding people's sentiments and opinions, and organisations are also able to understand how people react to their products or services.

METHODOLOGY

To retrieve tweets from Twitter, the fundamental tool that was used in this study is NVivo Version 12 Plus. NVivo is a data analysis tool for qualitative and mixed methods research that enables the effective retrieval and analysis of qualitative textual and non-textual data (Rajab et al., 2018). NVivo is the most comprehensive solution with capabilities such as automatic data analysis to identify themes and sentiments and additional data visualisation features, including the ability to build graphics of social media output relationships. Furthermore, NVivo rapidly captures the underlying ideas of data and generates automatic conclusions over a large volume of text and data. Data collection was done on 1 November 2021.

NVivo was selected as the best match for this study because it allows researchers to pre-design an analytical framework using predefined 'codes' of observation or data analysis. It could work with a wide variety of qualitative research designs, and data processing approaches easier and quicker. NCapture allows the material to be immediately imported from various applications, including Facebook, Twitter, Endnotes, and MS Access. This study uses NCapture to extract tweets on the Twitter platform. NCapture is a free web browser extension for NVivo that collects web material before being imported and analysed in NVivo (Silver et al., 2016). NCapture files provide the content that was collected as well as the URLs, timings, and any other information such as descriptions, memos, and code.

Research Process

Figure 1 shows the whole research process, from capturing Twitter data to data interpretation and visualisation. Collecting tweets is the initial step in the classification process. The data was gathered via NCapture in NVivo 12 Plus for extracting tweets using the hashtag #shopeemy.

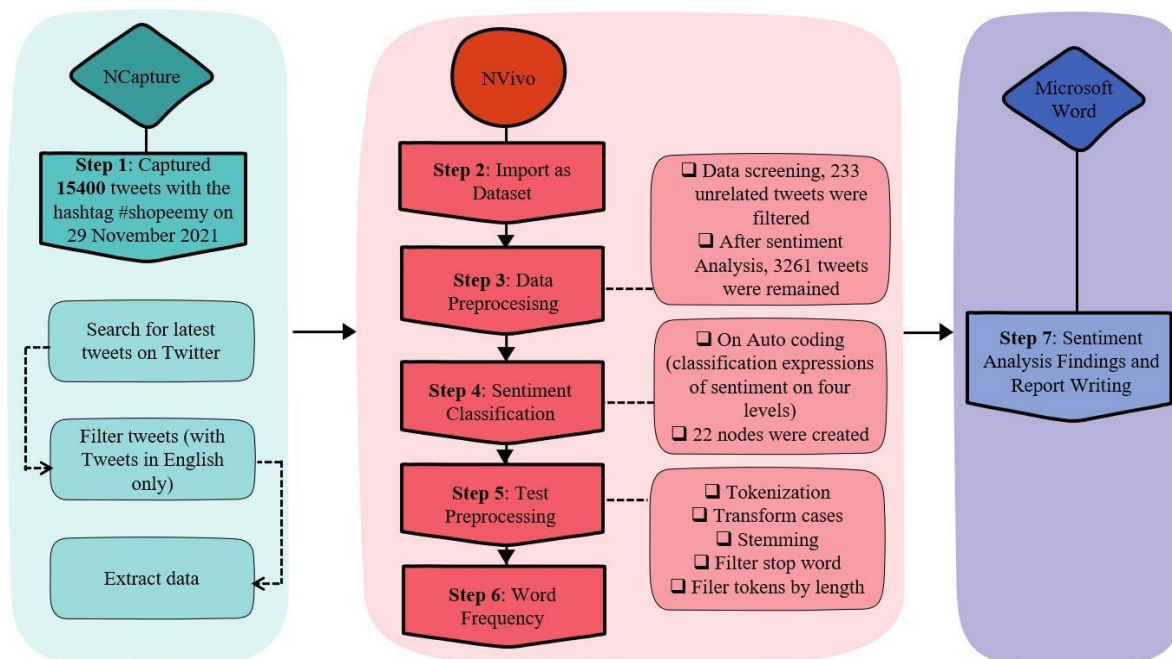


Figure 1: The flow of the research process

In step 1, the dataset was captured, and an advanced search on Twitter was used to filter the language as in English only, as shown in Figure 2. Initially, the dataset consisted of 15400 tweets, captured on 29 November 2021. Step 2 was to import the tweets' contents into NVivo Version 12 Plus as a dataset for further study.

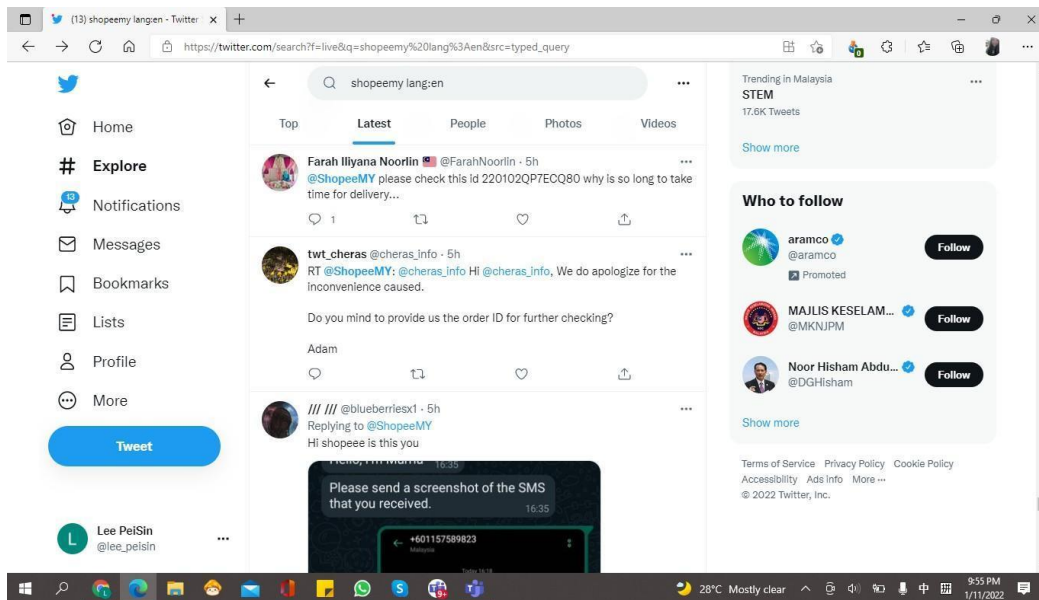


Figure 2: The Twitter Search Setting for English

Next is step 3, data screening is the process of filtering the collected data by selecting data regarding Shopee Malaysia. This process picks and eliminates contents unrelated to the analysis, including all advertising messages. Throughout this process, there were 233 tweets unselected. This research combined the built-in coding sentiment with auto-coding capabilities in NVivo to create user sentiments. There are auto-code features in NVivo 12 Plus that label the data as positive, negative, or neutral emotions. In addition, the auto-coder has built-in lexicons for positive and negative sentiments. After sentiment analysis, the remaining 3261 tweets were left. Using the sentences from Twitter, NVivo was used to automatically code expressions of emotion into four categories, ranging from positive to negative (1. very positive, 2. moderately positive, 3. moderately negative, and 4. very negative). For instance, positive words include happy, thank, love, best, and others, while examples of negative words are hate, late, false, inconvenience, and others. Words which are not positive or negative are considered to be neutral.

Furthermore, step 4 was to sort and filter the data to get different perspectives, and the content was annotated and coded manually using the node. Based on the auto code outcomes, process sentiment classification was done by creating 22 nodes. The manual coding technique offers the benefit of improving the accuracy of data interpretation. These Twitter postings were examined individually to assess the nature of the content and to link the post to the framework. The unit of analysis was the Twitter post. In an effort to deal with disagreement and come to a consensus, tweets with unclear messages were discussed. It is difficult to interpret the qualities of tweet content for each category, mainly when including photos, hyperlinks, symbols, and text. With a big data analysis volume, manual coding offers a barrier since it takes a long time and is work-intensive.

There are seven topics that emerged within the positive sentiment group: Customer satisfaction, customer service, delivery service, giveaway, promotion, seller satisfaction and socialising. Five topics for the negative sentiment group are identified: Apps Service, customer satisfaction, customer service, delivery service, and seller satisfaction. The examples of manually coded themes are listed for Very Negative Sentiment (see Table 1), Moderate Negative Sentiment (see Table 2), Moderate Positive Sentiment (see Table 3), and Very Positive Sentiment (see Table 4).

a. *Very Negative Sentiment Analysis*

Table 1: Sample results for Very Negative emotions

Nodes	Examples
App Service	<ul style="list-style-type: none"> • @ShopeeMY No, the vouchers just don't apply to the products I'm purchasing, and God knows why, you make things so difficult and confusing. • Shopee this is so unfair if we claim the voucher doesn't mean that it can be used like --- @ShopeeMY I hate you.
Customer Satisfaction	<ul style="list-style-type: none"> • Why don't y'all go fine @ShopeeMY RM1mil for allowing so many misleading/unqualified face masks and respirator on their 'Mall' section. • Why are the RM20 and RM12 OFF vouchers limited? It wasn't even one minute in my checkout section, and it already got fully redeemed. So unfair.
Customer Service	<ul style="list-style-type: none"> • Hi it's already 14 days passed but no refunds.
Delivery Service	<ul style="list-style-type: none"> • Yesterday already out for delivery...but failed to deliver. • This is very ridiculous! I was at home all day yesterday, and yet your courier failed to deliver? There was not even a single call from the guard house to inform them about delivery. Be more diligent if you're really serious in this business. • Your Shopee express is so slow. Please abolish them. Some of the items I ordered need to be used urgently. If it was another courier, I would have been received earlier, this is so frustrating.
Seller Satisfaction	<ul style="list-style-type: none"> • The most stupid in the world @ShopeeMY does not protect seller's interest at all! • @ShopeeMY I'm a seller and sometimes my buyers cancel and try to reorder to get their preferred courier in their area. But once they've canceled their previous order, they can't reapply their used vouchers which is kind of a bummer.

b. *Moderate Negative Sentiment Analysis*

Table 2: Sample findings for Moderate Negative emotion after manual coded

Nodes	Examples
App Service	<ul style="list-style-type: none"> • Is it me or #Shopee app is broken?! • Dear @ShopeeMY what I do wrong I want buy my maverick album https://t.co/kY8bdOErUu • @ShopeeMY fix your damn apps https://t.co/FHtsmiFHH
Customer Satisfaction	<ul style="list-style-type: none"> • @ShopeeMY please compensate me for your own negligence. • Give more discount and free shipping. Because free shipping didn't apply on my seasonal greetings and coins can't be redeemed. Sad. • If the voucher is fully redeemed get rid of it don't give us false hope

Customer Service	<ul style="list-style-type: none"> Hello! I forgot my password. I am using a laptop since my phone number was barred on Shopee due to self-request. My Phone and Shopee account was hacked last time. I can Access Shopee through Email or Laptop. Not a handphone Number. Please help. Thank you https://t.co/VQV9yILy8e
Delivery Service	<ul style="list-style-type: none"> Please improve Shopee express or let customers decide their own choice of courier. Hi @ShopeeMY, my parcel is still stuck at the PCH sorting center. Mine stated delivered TO MY NAME, when I enquired, they just asked "to check properly". Found it on my gate post, just left there, where anybody could steal it / take pics of my details.
Seller Satisfaction	<ul style="list-style-type: none"> @ShopeeMY does not protect the seller's interest at all! A customer can cheat and says he can't get the parcel, though the seller has proof that he has posted the goods. Look at the amount I have to bear.

c. *Moderate Positive Sentiment Analysis*

Table 3: Sample results for Moderately Positive emotions after manual coded

Nodes	Examples
Customer Satisfaction	<ul style="list-style-type: none"> @ShopeeMY admin !! you did a good job !! i love to see how min hype text is, so touching, thank you. Bought this, surprisingly so good https://t.co/im5wVaE30Q #ShopeeMY https://t.co/QlxXtEllGy.
Customer Service	<ul style="list-style-type: none"> Not to worry, the estimated delivery date is 16-12-2021, you may wait until the EDT first.
Delivery Service	<ul style="list-style-type: none"> @ShopeeMY J&t faster, why do you want to open Shopee express if this is super slow. https://t.co/mVYoE4AFVX Service J&T faster this time, Shopee Express now speeds slow like Pos Laju.
Giveaway	<ul style="list-style-type: none"> Thank you so much Shopee, the best online shopping app ever, have a good admin, choose me, pick me. Thank you Shopee, the most leading e-commerce platform for holding this giveaway. So far this is my fav purchase because I' m still a student so I can only afford buying unsealed albums. I wish I could win this giveaway & hope everyone is staying safe. Dear Shopee, thank you for this opportunity.
Promotion	<ul style="list-style-type: none"> Come celebrate together with all these awesome deals. Deals as below as RM34.90 at @ShopeeMY.
Seller Satisfaction	<ul style="list-style-type: none"> My 2021 journey as a Shopee seller is awesome because we aim for the sky. But move slowly. Enjoying every step along the way. It's all those little steps that make our journey complete. We thank you for your part in our journey! Seller: evelynepv #ShopeeSapotLokal @ShopeeMY https://t.co/Vlo9Y9d9dc
Socialising	<ul style="list-style-type: none"> Thank you for giving them love and support. Happy Birthday @ShopeeMY. Thank you so much Shopee, that was fun and hilarious. I have a good laugh.

d. *Very Positive Sentiment Analysis*

Table 4: Sample results for Very Positive emotions after manual coded

Nodes	Examples
Customer Satisfaction	<ul style="list-style-type: none"> ● Most importantly they sell authentic masks at affordable prices and I received mine in less than a week! ● The first item I buy is always the best item. I have all the best for everyone! ● Best buy!!!
Customer Service	<ul style="list-style-type: none"> ● Your kind patience and understanding on this matter is highly appreciated. ● @ShopeeMY hope this helps!
Giveaway	<ul style="list-style-type: none"> ● Thank you for the giveaway. ● To celebrate IVE's recent debut, stand a chance to win their signed album! ● My favorite Shopee purchase goes to this one album right here! My first album! Thank You for the giveaway Shopee!
Promotion	<ul style="list-style-type: none"> ● Let's dive into live! Let's win this! And I will make my favorite purchase this year. ● Remember to also claim and use 95% Off 12.12 Only Vouchers checkout for even more savings! ● So better claim now & checkout later!

Throughout this research process, step 5, which is test pre-processing and the following measures were also taken to determine if the emotion was positive, negative, or neutral after the dataset was imported into NVivo 12 Plus for further study. Firstly, each word in the tweet has been tokenised. Tokenisation is the process of separating a string sequence into individual tokens. Tokenisation is useful for separating a string into one or more phrases to be processed further, as each post or comment is saved as a string (Feldman & Sanger, 2006). Secondly, transform cases will be established, enabling NVivo to classify the tweets' results. In sentiment analysis, the cases "Very Negative", "Moderately Negative", "Moderately Positive" and "Very Positive" were to be established. Finally, stemming is used to reduce words in order to standardise them across the documents and make it simpler to group related terms into categories (Kannan & Gurusamy, 2014). Many phrases in English have many meanings. For instance, the core of the phrase's positions, placed, put, selection, rating, rank, ordered, ordering, and orders are the same. As a result, these phrases are traced back to their origin, making the search process more comprehensive.

Filter stops words, which are words that do not change the meaning of a phrase, are deleted. It also reduces the amount of work required to identify each and every word in a tweet by lowering the number of words to compare, such as a, an, and the. Stop word removal is a technique for identifying key terms that are utilised as filters in the tokenisation process (Ramadhan & Ramadhan, 2022). These kinds of words will be manually added to stop word lists and screened for the relevant terms that represent some emotions. At this point, the sentiment analysis has been completed in its entirety. However, before finalising and releasing the sentiment analysis results, one condition may be applied to the last stage of sentiment analysis: filtering the length of the token, which is also referred to as filtering the result by setting the length of tweets. Because the minimal length of tweets in this analysis is three, the last filtering step is to exclude tweets with less than three words. The token filtering is defined by restricting the tokens in each tweet to no fewer than three.

Moreover, step 6 can be run by a word frequency query in this node to display the cluster analysis diagram. NVivo 12 Plus gathers the most written words by Twitter users while discussing Shopee Malaysia and recording and interpreting emotions using NCapture. It is crucial to understand the most often used terms in tweets to explain the structure and type of tweet (Indartoyo et al., 2020). To demonstrate this, word clouds are used to illustrate. The larger the term in the word cloud, the more likely it appears in the library (Sharma & Ghose, 2020). The final step of this research was the interpretation of results, visualisation and report writing by using the Microsoft Word tool.

RESULTS

NVivo 12 Plus has been used for automated tagging of sentiments to text to analyse the tweets. Sentences that are very negative, moderately negative, moderately positive, and very positive may all be coded. Every category has its own lexicon in NVivo. Besides that, word modifiers such as exceedingly, more, or slightly may alter the emotion's class. The data is analysed using built-in Word Query Coding in NVivo software, which estimates the number of terms most often stated on Shopee Malaysia after receiving 3261 tweets as the primary data.

1. *Word Frequency Analysis Using Word Cloud*

The most frequently query-used words in the tweets of the hashtags provided are displayed in a word cloud. This is a fantastic tool to help researchers understand what is going on with the data by locating commonly used terms and phrases as a final product. Figure 3 shows the most frequent positive and negative words as a whole that have been used in the comments. The top 25 hashtag tweets are shown in Figure 3 and visually in word clouds, with the list including the number of tweets produced by each of the top 25 tweeters. This highlights the key and primary areas of conversation or discussion, and it is quite evident from Figure 3, that all of the tweets revolved around the word's "chance", "stand", and "wish." The opportunity is at the centre, surrounded by words that are primarily about Shopee Malaysia's giveaway activities.



Figure 3: Word Cloud of #shopeeMalaysia for Top 25 words frequency for all Tweets (the bigger the word, the more frequency appears in the Tweet)

The most frequently query-used words in the tweets of the hashtags provided are displayed in a word cloud. This is a fantastic tool to help researchers understand what is going on with the data by locating commonly used terms and phrases as a final product. Figure 3 shows the most frequent positive and negative words as a whole that have been used in the comments. The top 25 hashtag tweeters are shown in Table 5 and Table 6, with the list including the number of tweets produced by each of the top 25 tweeters. This highlights the key and primary areas of conversation or discussion, and it is quite evident from Figure 3, that all of the tweets revolved around the words "chance", "stand", and "wish." The opportunity is at the centre, surrounded by words that are mainly about Shopee Malaysia's giveaway activities.

Table 5: Most frequent words of positive sentiments

Word	Count	Word	Count
chance	509	performances	76
stand	506	beautiful	71
wish	289	upcoming	66
much	258	best	30
handsome	256	affordable	28
approved	226	satisfying	20
live	216	deals	19
show	215	brand	18
stream	215	brightening	18
celebrate	208	enjoy	18
happy	145	lover	18
favourite	136	super	17
savings	85		

Table 6: Most frequent words of negative sentiments

Word	Count	Word	Count
apologise	13	begging	3
inconvenience	13	centre	3
broke	8	customer	3
stray	7	express	3
false	6	late	3
stealing	6	missed	3
hate	4	never	3
parcel	4	stucked	3
proof	4	user	3
protect	4	address	2
sorting	4	bad	2
stupid	4	banned	2
apps	3		

Table 5 shows a sample of positive sentiments that are considered to carry positive emotions. NVivo maintains a list of words that are similar to the keyword. For example, the word "chance" can occur on several counts. All these will be normalised to the word promise and will count as occurrences of that emotion. Table 6 shows a sample list of words that are considered to carry negative emotions, with words such as apologies, broke, and inconvenience can be described as expressions of concern about customer service from Shopee Malaysia. Figure 4 shows the most frequent positive and Figure 5 illustrates the most negative words respectively.



Figure 4: The word cloud for most frequent in positive sentiment



Figure 5: The word cloud for most frequent in negative sentiment

II. Sentiment Analysis

Table 7 represents the sentiment analysis based on tweets. Out of 3261 comments, 284 tweets have been coded as very negative, 122 as moderately negative, 412 as moderately positive, and 2443 as very positive. Most of the tweets are very positive, followed by moderately positive. It is clearly visible that only a few tweets are very negative. Overall, Shopee Malaysia is viewed positively by Twitter users. Comments that do not fit into one of

these four categories are considered neutral. NVivo's auto-coding function does not attempt to categorise entire comments as positive or negative; instead, it examines individual words.

Table 7: Sentiment analysis from Twitter dataset

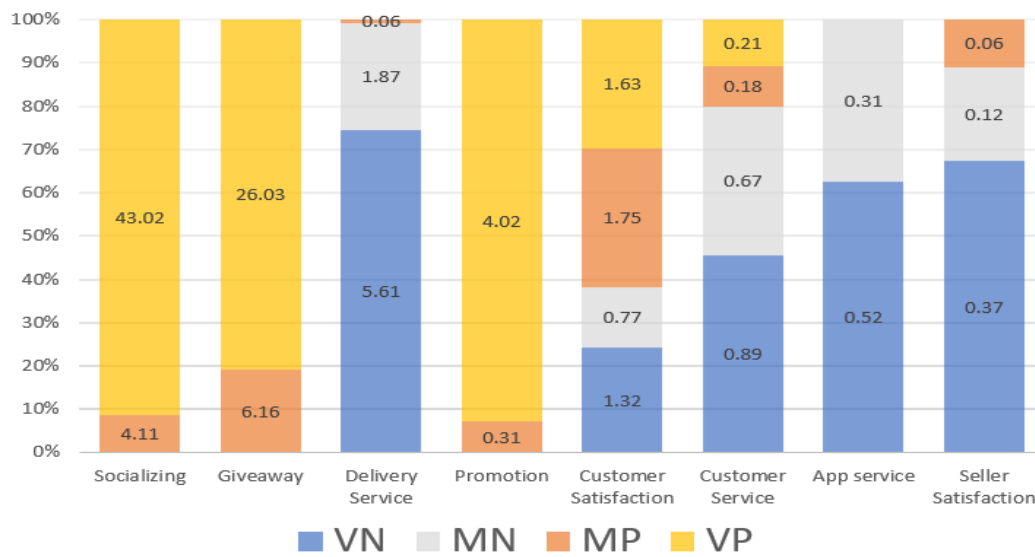
	Very negative	Moderately negative	Moderately positive	Very positive
Total Frequency	284	122	412	2443
Percentage	8.71	3.74	12.63	74.92

In this study, eight topics for #shopeemy were extracted by manual coding approach. Table 8 provides an overview of the eight important topics discussed on social media networks about online Shopee in Malaysia according to their weighting.

Table 8: Topic Discovery from Twitter Dataset

Topics	Frequency		VN	MN	MP	VP
	Total	%	%	%	%	%
Socialising	1537	47.13	-	-	4.11	43.02
Giveaway	1050	32.20	-	-	6.16	26.03
Delivery Service	246	7.54	5.61	1.87	0.06	0.00
Promotion	141	4.32	-	-	0.31	4.02
Customer Satisfaction	178	5.46	1.32	0.77	1.75	1.63
Customer Service	64	1.96	0.89	0.67	0.18	0.21
Application Service	27	0.83	0.52	0.31	0.00	0.00
Seller Satisfaction	18	0.55	0.37	0.12	0.06	0.00

The findings revealed numerous interesting topics that were evidently relevant to the e-commerce platform, such as socialising, giveaway, delivery service, promotion, customer satisfaction, customer service, mobile application service and seller satisfaction. Furthermore, findings demonstrated that Shopee had received more positive sentiments than negative sentiments, indicating a high level of satisfaction across all dimensions of services. In general, positive sentiment (moderate positive, very positive) is dominated by socialising, giveaways, and promotions, whereas negative sentiment (moderate negative, very negative) is dominated by delivery service and customer satisfaction, as depicted in Figure 5.



*Very Negative (VN), Moderately Negative (MN), Moderately Positive (MP) and Very Positive (VP)
 Figure 5: The Distribution of Sentiment Analysis from the Topic Discovery

a) Socialising

Socialising is the top area of concern for the majority of the tweet on #shopeemy, with an average of 47.13% (see Table 4), and all of them contribute to positive sentiment. The socialisation content consists of any post in which consumers provide comments or feedback regarding the appreciation and the feeling of being valued by the business's previous event content, such as their positive feedback for the rewards (Cvijikj & Michahelles, 2013). The option to react to postings with a remark provides customers with the opportunity to express themselves. Socialising relies on customers' voluntarily give feedback appears to be a powerful form of eWOM which positive eWOM is strategically important because it is typically associated with the satisfaction of a product, service or brand.

b) Giveaway

Among them, giveaway carried the second highest weight of topic sharing and comments on Twitter. In other words, statistically, the giveaway is the second topic mentioned most and was a primary concern for Twitter users regarding online retailing. A product or an item that is given away for free is referred to as a giveaway. Businesses often use this practice for marketing and advertising reasons in an effort to create app brand awareness, drive engagement and bring in a sizable number of new customers. The customer expresses positive sentiment, including moderate positive and very positive sentiment (32.19%) within the giveaway initiative by the e-commerce platform.

c) Delivery Service

Delivery service is the third-ranked factor in the topic list. Unlike the other topics, the delivery service significantly contributed to unsatisfactory aspects of the customers' experiences that contributed to the highest negative sentiment. This often occurs as a result of the customer not getting his or her purchase, the delivery of erroneous things, or the delivery of defective items.

d) Promotion

The promotion content refers to particular details linked to the marketing of a brand, products and services. Findings indicate that promotion gains full positive sentiment. This topic pertains to incentives, discounts, special offers, and economic advantages. Throughout the year, several sales are held to honour critical occasions such as festivals, events, holidays, and seasons, among others. Previous research indicates that customers are more likely to interact with content when they get communications from firms that provide incentives because they anticipate future rewards.

e) Customer Satisfaction

There is 5.72% of sentiment related to customer satisfaction. Customer satisfaction demonstrates higher positive sentiment than negative sentiment. However, this content contributed to the second-highest negative sentiment about #shopeemy. The level of customer satisfaction is a measurement that indicates how effectively a company's goods or services live up to the expectations of its customers. Customer satisfaction results from clients perceiving that they receive products and services commensurate with the price they pay. A set of variables that influence customer satisfaction includes quality, delivery and dependability, cost, flexibility, and innovation.

f) Customer Service

Posting information on social media about how a company handles customer service issues presents businesses with a number of options. Business uses customer service information to share information with customers to address their queries or problems, and providing information about delivery service, upcoming company events and activities are all part of providing customer service content. In addition, companies use customer service material to keep customers informed about any service or technical difficulties that may arise in their own companies. The findings indicate that Shopee Malaysia has a more negative sentiment toward customer service than a positive sentiment.

g) Application Service

E-commerce platforms now have the creative chance to provide customers with the instantaneous and customised shopping experience they desire via mobile applications service. An application for mobile devices is made to cater to customers' requirements by making it convenient and uncomplicated for them to use the services being provided. As a result, when compared to conventional websites, it is both a lot more dependable and a lot more individualised. The most common types of feedback were requests for new features, faults in application service functionality, and application crashes.

h) Seller Service

In the e-commerce platform environment, not only do online shoppers want a positive experience, but online sellers also need positive experiences in dealing with the e-commerce platform. Sellers on the e-commerce platform have many challenges in dealing with the customer, returns, refunds, and fulfilment.

DISCUSSION

Throughout the analysis of Twitter's tweets and comments from Shopee Malaysia's users and customers, the number of good comments vastly outnumber the number of negative comments.

In the positive word cloud, the two most frequently used terms in the positive word cloud are "chance" and "stand", which have been used over 500 times. This might be a consequence of customers engaging in Shopee Malaysia's giveaway event. Customers who participated in the event shared their views or opinions on Shopee Malaysia, the application, or the company itself and wished themselves luck in winning the events. The third, fourth and fifth most often used words in positive comments are "wish", "much", and "handsome", which may indicate that the user is expressing pleasant and grateful attitudes toward Shopee Malaysia. Additionally, the outcome of the coding analysis indicates that the "giveaway" category got the second-highest number of customer comments, only behind the "socialising" category. This might be the reason that the content of customer comments in the "socialising" category is more likely to be random than in the "giveaway" category, while customer comments in the "giveaway" category are more likely to include more familiar and similar words.

In the negative word cloud, delivery service-related terms such as "inconvenience", "broke", "stealing", "false", "parcel", "stucked", "protect", "address", and "late" are often used. Although the frequency with which these negative terms are used is rather low. However, the bulk of the negative words is covered by these words describing Shopee Malaysia's delivery service. This might be a result of using multiple couriers' services rather than concentrating on a single courier service. Each courier service has its own set of advantages and disadvantages, which may result in a variety of inconveniences, including damaged goods, late deliveries, items being delivered to the wrong location, or items going missing during delivery.

According to Table 1, the example results of Very Negative Emotions, customer feedback for the delivery service seems to be very aggressive and expresses disappointment with the delivery service experience. Besides that, the delivery service is one of the most significant aspects of an online purchase in terms of logistics, and its success directly impacts on customer satisfaction (Coşar et al., 2017). Thus, those negative words that were just mentioned are also related to the "Customer Satisfaction" category regarding the product sold on the application and received by the customer. Malaysia has the most excellent wait time for online deliveries in Southeast Asia (Cordon, 2021).

Throughout the coding analysis, the number of "Giveaway" and "Socializing" consisted of the 1951 tweets with very positive sentiments. The advantages of data analysis are far more complicated as it will be as the data is getting larger and more information can be extracted from it. Social media is also becoming one of the data sources that every business is bringing attention to because of free speech and directing feedback from customers regarding their usage experiences. With the collection of feedback from customers, businesses can make improvements or take advantage by bringing new excitement to the customers and gaining more brand exposure on social media platforms. Taking this analysis, for instance, customers on social media who comment about bad experiences with delivery service and their satisfaction with products need to be taken care of.

Therefore, Shopee Malaysia could provide more excellent solutions for the delivery service, such as giving out purchase vouchers for compensation or changing other courier services for the customer's future purchase. A compensation and incentives system may help foster a customer-focused culture (Madhani, 2019). These procedures outline the relationship between the company and the user by determining the terms of exchange. As for product satisfaction, Shopee Malaysia could raise the quality requirements for the sellers to prevent sellers from selling products with flaws, restrict sellers who sell improper products or have been reported selling fake brands, or provide compensation for the customers who encounter decent products. On the other hand, Shopee Malaysia has the opportunity to attract more customers or users' attention when tweets regarding giveaways and socialising. For example, the giveaway tweets may include the users who tweet the best idea for improvement regardless of any form. Additionally, socialising tweets may include asking customers for feedback regarding the previous event, such as their satisfaction with the rewards and promotion (Cvijikj & Michahelles, 2013).

CONCLUSION

The results of sentiment analysis utilising Twitter postings provide a new way to access the content of comments or discussions about the hashtag #shopeemy on Twitter among general users or consumers. Firstly, this study found that Shopee Malaysia is viewed positively by Twitter users. Approximately 87% (2855 out of 3261) of Twitter posts expressed positive sentiments, clear evidence that Shopee Malaysia has been recognised as a popular e-commerce site in Malaysia. The more positive an individual's attitude toward a behaviour, the more likely the intention of carrying out the behaviour (Peña-García et al., 2020). Therefore, if a customer's opinion of buying online is positive, the likelihood of purchasing from an online shop increase.

Furthermore, in terms of socialising and the giveaway category, Shopee Malaysia is related to a significant amount of positive Twitter postings. As shown in Table 4, users' remarks about the giveaway are usually favourable to the company. The customer not only delivers their views about Shopee Malaysia but also shows their appreciation. Besides that, this study also reveals that the delivery service provided by Shopee Malaysia is the main category among negative Twitter posts. The delivery procedure in online purchases significantly impacts customer satisfaction and decision-making on whether or not to buy items from a web store.

In general, most customers participated in the giveaway and socialising tweets more than others combined. These types of tweets are able to lead the customers of Shopee Malaysia to increase their brand exposure and attract more customers to use their application. However, some customers are also providing feedback regarding the bad delivery service and satisfaction, which Shopee Malaysia should focus on to overcome these issues or improve the delivery service and quality of the product.

For further study, larger sample sizes can be used to make more comprehensive findings. Furthermore, because Malaysians rarely use Twitter, other social media such as Facebook or Instagram, which are more famous in Malaysia, can be used as a platform for future study. Lastly, we could investigate more brands and compare them to see how people think about these brands in future research.

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