Analysis of "Mixue" Communication Network as Electronic Word of Mouth (E-WoM) Using Social Network Analysis

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Abstract

Netizens upload the keyword "Mixue" on Twitter, which can become an electronic word of mouth (E-WoM). E-WoM is one of the dominant factors influencing purchase demand for a product. Using the keyword "Mixue" to become a trending topic creates a communication network to disseminate information related or not to Mixue. This study aimed to determine the distribution of the "Mixue" network as a medium for electronic word of mouth using Social Network Analysis (SNA). The theory used is computer-mediated communication. The research method is quantitative with the SNA approach. Researchers crawled data on 10,000 tweets on December 27, 2022, when the keyword "Mixue" became a trending topic. The researcher used the application. The results showed that the "Mixue" communication network involved 7,702 actors and 8,391 conversations. @handokotjung became an important actor after posting a humorous tweet about Mixue's expansion in Indonesia. The tweet achieved 3.3 million views, 2,277 replies, 13.6K retweets, 2,682 excerpts retweeted, and 67.5K likes. The other actors also got into the conversation regarding Mixue. The perpetrators communicate with each other by replying, retweeting, retweeting quotes, or uploading their tweets, which can be electronic word-of-mouth (E-WoM) media accessed by anyone without exception. Mixue can use social media and important actors to increase people's buying interest in Mixue.

Keywords: Communication Network; Digital Marketing; E-WoM; Mixue; Social Network Analysis

Introduction

Mixue Ice Cream & Tea (Mixue) is a franchise company from China that sells ice cream and drinks at affordable prices. Until now, there are more than 21,000 Mixue outlets worldwide (Rosmayanti, 2023). Based on data from Momentum Works, Mixue has the fifth most outlets in the world after McDonald's, Subway, Starbucks, and KFC (Mustajab, 2023). Mixue has the most significant outlets in Southeast Asia, with over 1,000 outlets spread across Vietnam, Singapore, Malaysia, Thailand, the Philippines, and Indonesia. Mixue's first outlet in Indonesia was at Cihampelas Walk Bandung, growing until it reached 317 outlets (Wijayanti, 2023). By offering good product quality and affordable prices, Mixue can compete with other brands.

Mixue itself comes from the words Mi and Xue in Mandarin, where "Mi" means honey, which is taken from the words feng mi and pole mi, interpreted as sweet. While "Xue" means snow. So, when combined, Mixue means sweet snow like honey. The meaning of the word Mixue is not only trivia for Mixue consumers but also an inspirational story for entrepreneurs. Based on the meaning of Mixue, its
founder, Zhang Hongchao, developed various types of ice cream and drinks that have a sweet and refreshing taste. Apart from offering delicious taste, Mixue also develops its products at affordable prices with creative marketing strategies, such as launching a music video and introducing a mascot named "Snow King," which is currently traded as souvenirs at each outlet. It shows how Mixue continues to innovate and strives to continue to grow (Mixue - Ice Cream & Tea, 2023).

Mixue is actively developing its business network in various countries around the world. Currently, Mixue has at least 20,000 outlets in China and more than 1,000 outlets spread across Vietnam, the Philippines, Singapore, Malaysia, and Indonesia. Mixue also only requires a little money and effort to promote due to its popularity on social media, which makes many people curious and looking for Mixue, even though they do not advertise at all (Sandi, 2023). The existence of Mixue in Indonesia has become the subject of discussion among netizens due to the aggressive expansion of the business network carried out by Mixue. Many Mixue outlets have opened, encouraging Indonesian netizens to share their opinions and joke on social media (Sandi, 2023). Mixue's popularity has even become a trending topic on social media Twitter in Indonesia. Through several jokes expressed by netizens, such as several tweets, "Give me an empty shophouse, I will make it a Mixue outlet," or "Mixue is the Angel of Empty Shopkeepers," or joking opinions like Mixue targeting empty shophouses in Indonesia to become branches. The funny thing is that netizens are worried that even an empty heart and mind can become a new Mixue branch (Utami, 2022).

![Figure 1. Trending topic and tweet Mixue](source: twitter/suara.com, urbanjogja.com)

Opinions uploaded by netizens on Twitter are examples of electronic word of mouth (E-WOM). Electronic word of mouth is a form of marketing communication that contains positive or negative statements from potential customers about a product or company (Amanda et al., 2021). This statement is uploaded using various internet-based media so that other netizens can read it, allowing for synchronous or asynchronous interactions. Jansen et al. (in Purwaningdyah, 2019) said that e-WOM can provide alternative new information anonymously and confidentially across distance and region boundaries. According to Bataineh (2015), currently, e-WOM is the most dominant factor influencing purchasing decisions.

The influence of e-WOM can be classified into two levels, namely market-level analysis and individual-level analysis (Lee & Lee in Bataineh, 2015). In market-level analysis, researchers focus on market parameters such as total sales and income. In contrast, in individual-level analysis, researchers focus on individuals' influence in changing other individuals' purchasing decisions. The keyword "Mixue" is an example of an individual-level analysis using Twitter media which involves many actors or accounts that form interactions or communication networks. The communication network can affect information exposure, image, and purchasing decisions of Mixue products.

The communication network created using the keyword "Mixue" can be analyzed using Social Network Analysis (SNA). According to Rafita (2014), SNA is a method used to visualize interactions and networks between social media users. SNA is also used to map and measure interactions between actors (nodes), groups, organizations, agencies, and other processes that exist in a network (Rakhman et al., 2021). The interactions created can be seen through the actor and system levels, which have their respective dimensions. Measures at the actor level include 1) degree centrality, the number of interactions between actors; 2) closeness centrality, the closeness between actors; 3) betweenness
centrality, how often the actor becomes a link between other actors; 4) eigenvector centrality, how vital are the actors in a network (Prihantoro & Ramadhani, 2021).

At the system level, there are several dimensions, namely: 1) diameter, the farthest distance that can be reached by actors in the communication network; 2) density, the density of a communication network as indicated by the number of reciprocal interactions that occur between Twitter users; 3) reciprocity is a two-way communication that occurs between Twitter users; 4) modularity, groups or clusters formed in a communication network; 5) centralization, centralization in a cluster in a communication network. Analysis of the actor and system-level communication network can be used to determine the distribution and dominant accounts in the distribution of the keyword "Mixue" as a marketing medium for Mixue.

To find out the spread of the keyword "Mixue" as a form of E-WoM, researchers use Computer-mediated Communication Theory. According to Herring (in Arnus, 2015), Computer-Mediated Communication (CMC) can be interpreted as communication between people using computer media or via a computer. The development of the internet allows humans to use various computer devices to communicate. This communication can be synchronous and asynchronous. Synchronous means netizens communicate directly at the same time. Meanwhile, asynchronous is not done simultaneously, allowing senders and recipients to edit their messages so that interactions in CMC are more controllable. CMC theory is used to see communication between actors in the communication network with the keyword "Mixue."

Research on communication networks as a marketing medium using the SNA method was conducted by Priyanto & Farida (2021) with the title "Traveloka Marketing Communication Social Network on Twitter." The results of this study indicate that @traveloka is an important and popular actor in the #PilihAkuTraveloka communication network; 115 actors have a closeness centrality of 1.0, and no actor has a role as a liaison (betweenness centrality) in the communication network. @traveloka acts as a giver and receiver of information to his Twitter followers.

Subsequent research was conducted by Hawari & Trianasari (2021) with the title "Analysis of the Hashtag PastiAdaJalan on Gojek Company's Twitter Social Media Promotion Using SNA." The study results show that @gojekindonesia is a key actor in the #PastiAdaJalan network. The @gojekindonesia actor has the highest degree of centrality, betweenness centrality, closeness centrality, and eigenvector centrality values compared to other actors. @gojekindonesia can collaborate with other actors to improve marketing.

Subsequent research was conducted by Bratawisnu & Alamsyah (2018) with the title "Social Network Analysis for User Interaction Analysis on Social Media Regarding E-Commerce Business (Case Study: Lazada, Tokopedia, and Elevenia)." The results show that the Lazada interaction network is superior to other e-commerce interaction networks. Each e-commerce has its key actors to maximize interaction with social media users.

Based on the explanation above, the researcher conducted a study entitled "Analysis of the Communication Network "Mixue" as a Media Electronic Word of Mouth Using Social Network Analysis" to determine the distribution of the keyword network "Mixue" as a medium of electronic word of mouth using Social Network Analysis (SNA).

**Material and Methodology**

This study uses a quantitative methodology with a Social Network Analysis (SNA) approach. Social Network Analysis can be defined as a method that seeks to describe and explain social networks and network structures. Researchers used the Netlytic and Gephi applications to examine the structure and actors involved in the "Mixue" communication network for December 27, 2022. The population in this study was 36 thousand tweets using the keyword "Mixue" on December 27, 2022. The sample in this study is the 10,000 tweets on December 27, 2022, taken from Netlytic.org. The subjects in this study were Twitter account users who participated via tweets using the keyword "Mixue." The object of this study is the structure and actors involved in the communication network of the keyword "Mixue" as a medium of electronic word of mouth (E-WoM) on Twitter.
Result and Discussion

Mixue Ice Cream & Tea is an international franchise offering fresh tea and ice cream drinks that people love today (Oswaldo, 2023). Mixue appeared for the first time in Bandung in 2020, which then continued to grow until it was widely spread in several regions in Indonesia. Mixue is often discussed because its development is so fast, and it continues to open outlets to sell its various products. Based on Pandaily data (2/1/2023), the number of Mixue outlets in Indonesia at the end of March 2022 reached 317 stores and will continue to grow (Wijayanti, 2023).

With such rapid development, netizens expressed their admiration and jokes about Mixue through their personal Twitter accounts. On December 27, 2022, the keyword "Mixue" became a trending topic in Indonesia with 36 thousand tweets. The keyword "Mixue," a trending topic, can be an electronic word of mouth (E-WoM) media that benefits Mixue marketing in Indonesia. Through this research, researchers look at the structure and actors actively spreading the keyword "Mixue" as a medium of electronic word of mouth on Twitter.

“Mixue” Keyword Network Structure

The keyword communication network "Mixue" on December 27, 2022, is widely spread and forms several clusters or small groups. These clusters are a collection of actors who communicate with each other on Twitter using both the reply and retweet features. The replies and retweets made by the actors show that they communicate with each other and voice opinions, both for and against. Opinions created using the keyword "Mixue" can become a medium of electronic word of mouth (E-WoM) which positively impacts Mixue. The following is a visualization of the communication network for the keyword "Mixue" on December 27, 2022:

![Figure 2. Visualization of the "Mixue" Keyword Communication Network](Sumber: Netlytic.org)

The visualization above is the level of the communication network system with the keyword "Mixue." The system level is an overall picture of the network (network) that better interprets network structure and characteristics (Kurniaawan & Apriliani, 2020). The system level has several components that describe a communication network. The components in the "Mixue" keyword communication network are shown in Table 1 below:

**Table 1. Level Data of the Communication Network System Keyword "Mixue"**

<table>
<thead>
<tr>
<th>Components</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter</td>
<td>44</td>
</tr>
<tr>
<td>Density</td>
<td>0.000179</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>0.011660</td>
</tr>
<tr>
<td>Centralization</td>
<td>0.109300</td>
</tr>
<tr>
<td>Modularity</td>
<td>0.846500</td>
</tr>
</tbody>
</table>

Sumber: Netlytic.org
Diameter

The diameter is the farthest location that can be reached by actors in a network (Carolan in Eriyanto, 2014). In the table above, the diameter of the communication network for the keyword "Mixue" is 44. This value indicates that the keyword "Mixue" is a communication network with a broad message distribution and can reach Twitter users to interact with each other. The spread of messages impacts the slowness of information about "Mixue." Still, it allows for electronic word of mouth, which positively impacts the development of the "Mixue" brand.

Density

Density compares the number of social relations and possible social relations in the network (Indrihapsari, 2013). The density value in the communication network for the keyword "Mixue" is 0.000179. This value indicates that the intensity of communication between the actors of the keyword "Mixue" is relatively low or not dense. The state of the network is not congested, and the actors involved are less close due to the lack of interaction between actors. Netizens only post opinions about "Mixue" using their Twitter account without succeeding in sparking a conversation. However, Twitter accounts with many followers manage to spark conversations through likes, replies, retweets, or retweet quotes.

Reciprocity

Reciprocity is a valuable indicator for measuring the level of mutuality or reciprocity of people involved in a directed network. Reciprocity in the communication network, the keyword "Mixue" is 0.011660. This value indicates that the reciprocal relationship in the communication network for the keyword "Mixue" is relatively low. Netizens use the keyword "Mixue" to show their opinions that are related or not related to the Mixue brand. The tweets did not create conversation in the "Mixue" keyword communication network.

Centralization

Centralization measures the average centrality level of all nodes on a network. In the communication network, with the keyword "Mixue," the centralization value is relatively high, 0.109300. This value indicates that the communication network with the keyword "Mixue" is spread over several large clusters centered on a central actor. Central actors play a role in starting conversations, eventually getting responses from other actors. The central actor plays a role in the dissemination of information about Mixue.

Modularity

Modularity is a cluster or group involved in a communication network. The value of modularity in the communication network for the keyword "Mixue" has a high value of 0.846500. This value indicates the number of groups created in the "Mixue" communication network. Different clusters or groups have different topics of discussion, so the more clusters, the more discussion topics regarding "Mixue" will be discussed by netizens. The topics that are created can be positive or negative.

Distribution of the Keyword "Mixue" as a Media Electronic Word of Mouth (E-WoM)

In the "Mixue" keyword communication network, several important actors play a role in spreading the "Mixue" keyword. The spread of the keyword "Mixue" on Twitter can become an electronic word of mouth (E-WoM), a source of factual information based on other consumers' buying experiences. The positive opinion given by consumers regarding "Mixue" can form a positive image that will impact increasing purchases of "Mixue" brand products.

Based on 10,000 tweets that researchers got from the Netlytic.org website, 7,702 actors (nodes) are involved in the "Mixue" keyword communication network. These actors formed 8,391 interactions (edges) to discuss various topics regarding Mixue. Of the 7,702 actors, there are several important actors who serve as liaisons or actors who become reference material through several components at the actor level, namely degree centrality, closeness centrality, betweenness centrality, and eigenvector centrality.

Degree Centrality

Degree centrality shows actors their level of popularity in a network (Rakhman et al., 2021). Popular actors are contacted (in-degree) or contacted (out-degree) by other actors in a communication
network. In the communication network for the keyword “Mixue” on December 27, @handokotjung, @convomfs, @risolmayonnaise, @navirowinstons, @kuangi_love, @cursedkidd, @alterrrego_, @tanyarlfs, @food_fess, and @tanyakanrl became popular actors because many actors contacted them. The in-degree and out-degree values of each actor are shown in the image below:

<table>
<thead>
<tr>
<th>Label</th>
<th>In-Degree</th>
<th>Out-Degree</th>
<th>Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>handokotjung</td>
<td>1472</td>
<td>0</td>
<td>1472</td>
</tr>
<tr>
<td>convomfs</td>
<td>685</td>
<td>0</td>
<td>685</td>
</tr>
<tr>
<td>risolmayonnaise</td>
<td>534</td>
<td>0</td>
<td>534</td>
</tr>
<tr>
<td>navirowinstons</td>
<td>499</td>
<td>0</td>
<td>499</td>
</tr>
<tr>
<td>kuangi_love</td>
<td>428</td>
<td>0</td>
<td>428</td>
</tr>
<tr>
<td>cursedkidd</td>
<td>282</td>
<td>0</td>
<td>282</td>
</tr>
<tr>
<td>alterrrego_</td>
<td>190</td>
<td>0</td>
<td>190</td>
</tr>
<tr>
<td>tanyarlfs</td>
<td>168</td>
<td>0</td>
<td>168</td>
</tr>
<tr>
<td>food_fess</td>
<td>162</td>
<td>0</td>
<td>162</td>
</tr>
<tr>
<td>tanyakanrl</td>
<td>124</td>
<td>0</td>
<td>124</td>
</tr>
</tbody>
</table>

Figure 3. The Highest Degree Centrality of Communication Network ”Mixue”
Source: Gephi

@handokotjung is the most popular actor on the “Mixue” communication network because 1,472 other actors contacted him via retweets and replies. Retweets and replying are forms of communication that occur through social media, Twitter. The actors do not know each other in real life, but they communicate to discuss topics regarding Mixue. @Handokotjung uploaded a tweet that joked with the identity of Mixue. Through a tweet uploaded on December 26, 2022, @handokotjung joked that netizens who are alone for too long; their heart will become a Mixue kiosk. The tweet by @handokotjung refers to the phenomenon of Mixue, which is increasingly well-known in the community, so the number of Mixue kiosks is increasing, and they often occupy stalls that have been empty for a long time. This tweet attracted much attention from netizens, reaching 3.3 million views, 2,277 replies, 13.6 thousand retweets, 2,682 retweet quotes, and 67.5 thousand likes. Netizens involved in this conversation agree with the rise of Mixue stores in Indonesia. Some netizens added jokes about Mixue, which increased the frequency of discussions about Mixue. It can be a medium of electronic word of mouth to increase public awareness and interest in buying Mixue.

The second popular actor in the “Mixue” keyword communication network is @convomfs; a menfees account with 1.4 million followers. The Menfess account is an auto base account that accommodates various tweets from anonymous users. One of the @convomfs followers uploaded a tweet about Mixue on December 27, 2022, and got 2.3 million views, 4,497 retweets, 1,411 quote tweets, and 59.3 thousand likes. The Menfess uploaded a photo showing the Mixue product presented at the celebration. This Menfess is finally busy because it highlights the Mixue phenomenon, which has successfully entered various activities, including celebrations.

The third popular actor in the communication network for the keyword “Mixue” is @risolmayonnaise, who also satirized the Mixue phenomenon through a joking tweet uploaded on December 25, 2023. In his tweet, @risolmayonnaise stated that Indonesia had been colonized thrice by the Netherlands, Japan, and Mixue. @risolmayonnaise argues that Mixue succeeded in colonizing Indonesia because it opened many kiosks in various places. This tweet managed to attract the attention of netizens, who replied with jokes related to the Mixue phenomenon. Based on data obtained from Netlytic, @risolmayonnaise’s tweet was contacted by 534 actors who did not know each other but had discussions together.

@navirowinstons, @kuangi_love, @cursedkidd, @alterrrego_, @tanyarlfs, @food_fess, and @tanyakanrl also wrote their opinions on the Mixue phenomenon through humorous tweets that caught the attention of many netizens. These tweets eventually spread widely to other netizens who have no direct relationship with the popular actor. The actors gave their opinions regarding Mixue, which eventually spread widely to influence other individuals’ perceptions regarding Mixue. These tweets become electronic word-of-mouth media that can be used as reference material for others.
Eigenvector Centrality

According to Eriyanto (Putri et al., 2018), eigenvector centrality looks at important actors based on the number of networks formed with other actors. Actors can be considered important if their eigenvector centrality value reaches 1 (one) (Prihantoro et al., 2021). In the "Mixue" communication network, @handokotjung is the only actor with the highest eigenvector centrality, 1. Several other actors have eigenvector centrality, but the value needs to be higher, below 0.5.

@handokotjung became an important actor in spreading the keyword "Mixue" on December 27, 2022, because his tweet about Mixue attracted much attention from netizens. @handokotjung is a graphic designer who has also become a celebrity twit since 2014. @handokotjung has almost 700 thousand followers and regularly uploads humorous tweets. @handokotjung also responds in the form of replies or retweets to build interaction with his followers. With an eigenvector centrality value of 1, @handokotjung is the actor who initiates the conversation using the keyword "Mixue." @handokotjung also succeeded in creating various interactions with netizens using the keyword "Mixue."
Betweenness Centrality

Betweenness centrality looks at actors who are a link in a communication network with a maximum score of 1 (one) (Prihantoro et al., 2021). Actors with high betweenness centrality become reference materials and references for other actors in a communication network. In the communication network for the keyword “Mixue” on December 27, 2022, @thimbleheaven, @01509j, @clinomaniazzz, @shopp_handeu, and @ziuuucy became the actors with the highest betweenness centrality with a score below one. @thimbleheaven, @01509j, @clinomaniazzz, @shopp_handeu, and @ziuuucy actively use the keyword "Mixue” in every tweet that contains product links at Shopee and is not related to Mixue. The five actors use the trending keyword "Mixue” to promote products by including a link on Shopee. The tweet finally uploaded was widely viewed and received responses from netizens but with low scores because it was not directly related to Mixue. It shows that netizens pay more attention to tweets directly related to Mixue.

![Figure 7. Visualization of Betweenness Centrality of “Mixue”](image)
Source: Gephi

Closeness Centrality

Closeness centrality shows the value of closeness between actors, with the highest score being one. The closer the distance between actors, the more information can be spread quickly and widely. In the communication network with the keyword "Mixue,” 5,540 out of 7,702 actors have a closeness centrality value of 1 (one). Dissemination of the keyword "Mixue” information took place quickly and widely. Netizens share information through jokes, facts, and data using the keyword "Mixue,” which is spread into several clusters. The keyword "Mixue” in uploaded tweets may or may not be related to Mixue. Some actors use the keyword "Mixue” for promotions through their accounts.

![Figure 8. Visualization of Closeness Centrality of “Mixue”](image)
Source: Gephi

The keyword "Mixue” distribution on December 27, 2022, as seen using Netlytic and Gephi, shows the involvement of several popular actors, important actors, and liaison actors who can expand the communication network. The actors communicate with each other by replying, retweeting, retweeting quotes, or uploading their tweets to show opinions or information unrelated to the keyword "Mixue.” Opinions or statements uploaded regarding Mixue can be electronic word-of-mouth (E-WoM) media that anyone can access without exception.

Electronic word of mouth (E-WoM) can be defined as negative or positive statements made by consumers uploaded via internet media. These media can be on websites, discussion forums, or social
media accessed by consumers and other netizens. Tweets uploaded about a product can be spread and accessed by other netizens as a reference and reference material. Analysis of the communication network for the keyword "Mixue" was carried out to see the popular and important actors who played a role in spreading the keyword "Mixue" as a medium of electronic word of mouth (E-WoM). The actors involved play a role in how wide the communication network will be formed using the keyword "Mixue." Actors with high followers and engagement will spread the keyword "Mixue" so that people will become more familiar with Mixue’s products.

Conclusions
The @handokotjung account became an important actor in the “Mixue” communication network through a tweet uploaded on December 26. This tweet reached 3.3 million views, 2,277 replies, 13.6 thousand retweets, 2,682 retweet quotes, and 67.5 thousand likes. @convomfs is a mentees account that discusses Mixue and manages to get 2.3 million views, 4,497 retweets, 1,411 quote tweets, and 59.3 thousand likes. The Menfess uploaded a photo showing the Mixue product presented at the celebration. The actors spread the keyword "Mixue" via electronic word of mouth (E-WoM) to spread information about Mixue. The spread of keywords can increase public awareness and interest in buying Mixue.

References

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