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Sharing Economy of Online Food Delivery: Revealing the Underlying Attributes of the Customer Experience through Semantic Network Analysis

Hepinda Fajari Nuharini
Institut Teknologi Bandung, hepinda_fajari@sbm-itb.ac.id

Mustika Sufiati Purwanegara
Institut Teknologi Bandung, mustika@sbm-itb.ac.id

Sharing Economy of Online Food Delivery: Revealing the Underlying Attributes of the Customer Experience through Semantic Network Analysis

Hepinda Fajari Nuharini* and Mustika Sufiati Purwanegara
School of Business and Management, Institut Teknologi Bandung, Bandung, Indonesia

Abstract

Research Aims: This study aimed to reveal the underlying attributes of the customer experience in the sharing economy of online food delivery (OFD).

Design/Methodology/Approach: After collecting 45,116 reviews from the Google Play store, a semantic network analysis was conducted. Python programming language and text mining were utilised to extract keywords from online reviews, a frequency analysis was performed, and a CONvergence of iterated CORrelations (CONCOR) analysis was conducted using Ucinet 6.0.

Research Findings: The keywords 'food,' 'order,' 'driver,' and 'application' had the highest frequency and centrality. Customer experience attributes were classified into four clusters: 'Delivery Procedure', 'OFD Platform', 'Payment Process' and 'Value of Money'.

Theoretical Contribution/Originality: This study provides a relevant and novel assessment of customer experience using semantic network analysis, which should be more broadly used in academic research.

Managerial Implications in the Southeast Asian Context: Given the predicted growth of online food delivery in Southeast Asia and shared cultural values with Indonesia, the findings of this study may have implications for developing strategies of sustainability in the sharing economy of online food delivery enterprises.

Research Limitations & Implications: This study only collected online customer reviews from the Google Play store, and because the method focused on word frequency, understanding of the additional meaning of words is lacking.

Keywords: online food delivery, sharing economy, semantic network analysis, customer experience, online review

INTRODUCTION

The business model of the sharing economy has developed rapidly (Zhu & Liu, 2021). This model is also known as collaborative consumption, platform markets and the gig economy (Lin et al., 2021). In recent years, the sharing economy has emerged as a new trend in the online market, leading to enormous social and economic benefits for individuals, corporations and society (Kong et al., 2020). This is evidenced by the sharing economy assisting enterprises in entering new markets, generating new streams of revenue and reducing operational costs (Engert et al., 2016). The rapid expansion of the sharing economy is becoming more substantial. For example, PwC (2015) noted that the global sharing economy could reach more than $15 billion in 2015. By 2025, this value is predicted to increase to $335 billion. With this expansion, more businesses, manufacturers and sellers are inspired to enter the market and adopt various sharing economy models (Bian et al., 2021). An example of sharing economy has been adopted in a diverse range of businesses, such as tourism, transportation, entertainment, lodging and online food delivery (Correa et al., 2019; Pigatto et al., 2017).

On March 11, 2020, the World Health Organization (WHO) announced a global pandemic (WHO, 2020) of COVID-19, a disease caused by a novel coronavirus. This unprecedented public health crisis significantly influenced modes of production and consumption around the world as the virus spread internationally. Nearly every country was impacted within a matter of months. Consequently, governments implemented national and regional lockdowns, limits on personal mobility, sanitary mask regulations and physical distancing suggestions to help contain the spread of the virus (Cheng et al., 2021). The pandemic has affected performance in every sector. However, although few enterprises have been attempting to avoid the massive disruptions caused by the pandemic (Lopes et al., 2020), the sharing economy sector has uncovered new opportunities (Batool et al., 2020). Align with Mont et al. (2020), who explained the importance of sharing economy, has been gaining growing attention recently.

One example is online food delivery, which saw significant development during the COVID-19 pandemic by making use of popular online-to-offline mobile technology. Contactless delivery allowed individuals to adhere to the government's physical distancing regulations by staying at home and reducing unnecessary interaction with others (Zhao & Bacao, 2020). A recent report published by McKinsey & Company (2020) found that spending preferences for online food delivery will increase to 12% from pre-post-pandemic levels. Indonesia is no exception to this phenomenon where online food delivery provides a continuous, sustainable revenue stream, earning around US$1.915 million in 2020, with growth expected to increase by 54.8% by 2024

(Prasetyo et al., 2021). Aside from the revenue stream, the country also accounts for the largest share of online food delivery in Southeast Asia, with an estimated gross merchandise value (GMV) of $3.7 billion in 2020. Completing the region's top three online food delivery markets are Singapore and Thailand, with US$2.8 billion and $2.4 billion in GMV, respectively (Momentum Works, 2021). The promising future of the Indonesian online food delivery business has received considerable attention from numerous enterprises, resulting in a highly competitive online food delivery market in Indonesia. GoFood, GrabFood, ShopeeFood and TravelokaEats are some of the enterprises that provide online food delivery in Indonesia. The newcomer, AirAsia Meal, announced the launch of online food delivery in early 2022 (TeachInAsia, 2021).

Despite the advantages of online food delivery, such enterprises frequently struggle to survive. The inability of Foodpanda, an online food delivery business owned by German start-up builder Rocket Internet, to penetrate the online food delivery market in Indonesia is an example. Foodpanda ended its operations in Indonesia in 2016 after making its debut in the nation in 2012 (The Jakarta Post, 2016). The company did not provide an official reason for its withdrawal from the market (Tech In Asia, 2016); however, it implied that it could not compete with other online food delivery companies providing the same service in the same geographic area. According to Mai et al. (2021), fierce competition in the global market has become increasingly challenging, even in the sector of food delivery services and online food delivery companies must ensure their competitive advantage (Lovelock et al., 2015).

Service researchers have suggested that customer experience is a significant competitive advantage for service companies to pursue (Gentile et al., 2007; Lemon & Verhoef, 2016; Mai et al., 2021). Various studies have also found that customer experience is an important criterion when measuring the impact of a business's sustainability in the sharing economy (Bascur et al., 2020; Trivedi, 2019; Wibowo et al., 2020). Some leading brands have acknowledged the essential need for customer experience frameworks (Ta et al., 2022). Others, such as Google, Apple, Amazon and Facebook, have recognised that interface design must focus on aesthetics and the whole experience (Bačíková & Galko, 2018). They have also positioned customer experience as the centre of their company's strategy and assigned executives to explicitly manage customer experience (De Keyser et al., 2020; Lemon & Verhoef, 2016; Ta et al., 2022). Scholars have also empirically demonstrated the impact of customer experience on a wide range of positive organisational outcomes (Mai et al., 2021). Customer experience has been found to significantly contribute to customer satisfaction, repeat purchases, customer loyalty, favourable word-of-mouth (Gentile et al., 2007; Ta et al., 2022) and, ultimately, increased profitability and improved company financial performance (Liu et al., 2021; Zhang & Kim, 2021).

However, despite recognising the significance of customer experience in the development of successful businesses, the researcher identified four major gaps in previous research that are addressed in this study. The first is an apparent theoretical gap concerning customer experience in online food delivery. Previous research addressed several aspects of online food delivery, including (1) factors influencing customers' online food delivery motivation (Ali et al., 2020; Belarmino et al., 2021; Yeo et al., 2017); (2) factors influencing online food delivery usage (Hong et al., 2021; Jun et al., 2021; Ray et al., 2019; Zhao & Bacao, 2019); and (3) factors based on the technology acceptance model (TAM) to better understand the customer adoption process of online food delivery (Roh & Park, 2017; Troise et al., 2020), yet Ta et al. (2022) stated that customer experience had been neglected. Nevertheless, the investigation of customer experience is critical because the attributes that make up customer experience vary across contexts, including online food delivery (Mai et al., 2021).

Second, a knowledge gap appears based on a review of previous research, and the topic of the sharing economy in online food delivery has not been addressed. Several studies investigated the impact of the sharing economy on the hospitality business, with an emphasis on accommodation and transportation (Cui et al., 2020; Garud et al., 2020; Liu et al., 2021; Mohamed et al., 2020; Wang et al., 2019; Yi et al., 2020). Therefore, the sharing economy is worthy of additional investigation in the context of online food delivery, as it is underrepresented in earlier research (Correa, 2018; Lin et al., 2020; Furunes & Mkono, 2019). An investigation into these issues is critical because online food delivery is one of the fastest growing economic sectors, with a total global market revenue of around $107.4 billion in 2019 and expected to approach $182.3 billion by 2024 (Statista, 2020a), indicating that customer demand for online food delivery is predicted to increase significantly (Prasetyo et al., 2021; Southey, 2020).

Third, the researcher discovered a methodological gap in the previous research. There is a lack of semantic network analysis in identifying attributes that reflect customer experience in online food delivery. This does not mean that surveys are ineffective for studying customer experience, and they are still used in some studies as a data collection technique (Gârdan et al., 2021; Yeo et al., 2017). However, semantic network analysis based on online customer reviews is widely considered a rich type of data available on websites or smartphone apps because it provides spontaneous information on the experiences of customers who use the service and platform to enjoy the benefits of the sharing economy (Correa et al., 2018; Lee et al., 2019; Xiang et al., 2017; Zhang, 2019).

Fourth, based on the previous studies, Indonesia is not well represented and therefore represents a population gap. Investigation of this group is critical because Indonesia is one of the developing countries that significantly relies on online food delivery in daily activities (Cahyani et al., 2020; Prasetyo et al., 2021), as shown by the fierce competition among online food delivery enterprises in Indonesia, such as GoFood, GrabFood, ShopeeFood and TravelokaEats (KataData, 2021).

Therefore, to fill the above research gaps, this study aimed to reveal the underlying attributes of customer experience based on a semantic network analysis of Indonesia's online food delivery and the sharing economy.

LITERATURE REVIEW

Sharing economy

The meaning of the sharing economy has been widely promoted in academic literature as an economic model for obtaining, giving or sharing access (Aloni, 2016; Hamari, 2016) by leveraging the idle capacity of goods and services through online platforms (Lin et al., 2021; Netter, 2017; Wosskow, 2014). Several studies have stated that the sharing economy is facilitated by the Internet and that Web 2.0 allows online users to share their underutilised goods and services for monetary or non-monetary benefits (Akin et al., 2021; Karlsson & Dolnicar, 2016; Malik & Wahaj, 2019). Additionally, a definition proposed by Dabbous and Tarhini (2021) of the sharing economy is an economic system in which goods or services are shared through the Internet between private individuals, for-profit or non-profit purposes, with the goal of making efficient use of societal resources and encouraging a more sustainable economic model of consumption. Therefore, the three main characteristics of the sharing economy include (1) access economy, (2) platform economy, and (3) community-based economy, where underutilised goods and services are shared. Accordingly, users, information technology (IT) platforms and providers of shared commodities are the main stakeholders in the sharing economy (Akhmedova et al., 2020).

Following the justifications presented in previous studies (Abutaleb et al., 2021; Aloni, 2016; Correa et al., 2018; Malik & Wahaj, 2019; Miller et al., 2018; Mont et al., 2021), the sharing economy operates based on access to underutilised goods or services; that is, the sharing economy transforms the market into a more sustainable ecosystem by impacting its economic, social and environmental development (Karobliene & Pilinkiene, 2021). The first aspect is economic development. The sharing economy is a driver of sustainable economic development because it raises the standard and quality of life by facilitating the use of existing resources

(Bonciu & Balgar, 2016; Heinrichs, 2013). Furthermore, the sharing economy has been found to be beneficial for reducing search and transaction costs (Nadler, 2014), providing extra income for owners and costing less (Porter et al., 2011; Shaheen et al., 2008). The second aspect is social development. According to Fang et al. (2015) and Martin et al. (2011), the sharing economy is essential for addressing the unemployment problem. The sharing economy is also frequently described as a vehicle for establishing social relationships and building social capital within the local community (Benkler, 2017; Tussyadiah & Pesonen, 2016). Lastly, there is the aspect of environmental development. The sharing economy has been presented as promoting environmental awareness in modern societies by enabling more sustainable consumption practices (Ala-Mantilaa et al., 2016; Bonciu & Balgar, 2016). It also contributes to the conservation of energy, waste reduction, emissions and carbon footprint (Belk, 2014; Leismann et al., 2013; Plewnia & Guenther, 2018).

Various studies have noted that the sharing economy is a relatively diversified field. Common examples are accommodation, ride-hailing, food delivery, co-working spaces and shared access to physical goods (Bouncken & Reuschl, 2018; Curtis & Lehner, 2019; Guo et al., 2019; Ma et al., 2018; Münzel et al., 2020; Prayag & Ozanne, 2018; Ukolov et al., 2016). However, this study concentrated on online food delivery because this segment has been one of the fastest-growing economic sectors in recent years (Lin et al., 2021).

Online food delivery (OFD)

Online food delivery is defined as a business platform that connects customers with partner food service operations through a mobile application to process food ordered online, which is prepared and delivered to the customer's specific location (Ali et al., 2020; Hong et al., 2021; Jun et al., 2022; Ray et al., 2019; Saad, 2020; Zhao & Bacao, 2020). OFD providers can be categorised into food chain restaurants (e.g. Domino's, Pizza Hut) and mobile applications (e.g. GoFood, GrabFood) as intermediates for multi-restaurant services (Ali, 2020; Saad, 2020). In particular, the development of UberEats as an intermediate for multi-restaurant services in North America (Belarmino et al., 2021) has accelerated the growth of OFD in developing countries (Li et al., 2020). This growth is also due to OFD platforms fulfilling a variety of functions, such as providing consumers with a wide range of preferred restaurants and diverse food choices, taking orders and relaying them to the food producer, monitoring the payment, organising food delivery and providing tracking facilities (Li et al., 2020). These functions can be carried out because four major stakeholders facilitate the service (Figure 1): (1) third-party intermediary platforms that construct an OFD mobile application; (2) merchant service providers that supply food; (3) food delivery workers to deliver food orders from the merchant

service provider to the customer location; and (4) the customer who orders food on the mobile application (Lin et al., 2021).
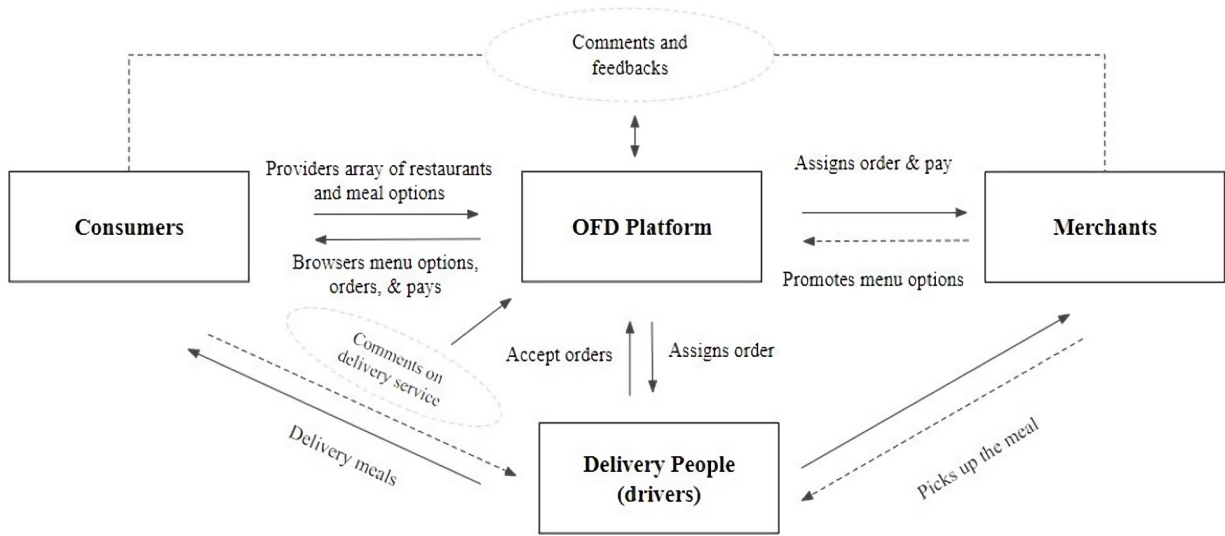

Figure 1. Online food delivery stakeholders

Studies have listed various reasons for the significant gain in popularity of OFD, such as (a) their capacity to provide customers with expanded choices and convenience by allowing them to order from a variety of restaurant options with a few clicks on their mobile phone (Hirschberg et al., 2016); (b) convenient and quick food delivery to the customer's doorstep with no waiting in line or travelling for pick-up, which satisfies the needs of individuals residing in urban areas (Ali et al., 2020; Saad, 2020; Hong et al., 2021; Xu, 2017); and (c) promotions and discounts from daily offers (Hong et al., 2021; Ray et al., 2019). In addition, OFD provides restaurants with the opportunity to increase revenue without increasing seating capacity and provides informal job opportunities for food delivery workers (Lin et al., 2021; Xu & Huang, 2019). Recently, demand for OFD increased due to the COVID-19 pandemic due to social distancing and the fact that people were terrified of crowds in restaurants. The NPD Group reported that the number of OFD orders grew by 67% in March 2020 compared to March 2019 (NPD, 2020). Rising growth also occurred in Indonesia, with competitive market development among GoFood, GrabFood, ShopeeFood and TravelokaEats (Momentum Works, 2021)

Customer experience

Experience-based economics has recently developed into an important area of study (Rahardja et al., 2021), given its role in directly increasing business profitability and maintaining a company's competitive advantage among its peers (Chen & Yang, 2020). According to Bascur and Rusu (2020), customer experience is a broad notion involving customers and companies

that covers customers' physical and emotional experiences while engaging with products, platforms and services. Similarly, Meyer and Schwager (2007) defined customer experience as the customer's direct and indirect engagement with a company. Direct engagement tends to occur during the purchase or usage of the products and service and is usually initiated by the consumer, whereas indirect engagement tends to occur during unplanned meetings with representatives of a company's products, services or brands in the form of word-of-mouth recommendations or complaints, advertising and reviews. Various studies have added that customer experience also occurs when a consumer creates an impression or gains knowledge while engaging with various elements of content provided by either a product or service provider across multiple channels and across time, and it has been recognised as a persuasive antecedent of competitive advantage in a wide range of business contexts (Ta et al., 2022; Holmlund et al., 2020; Yoo et al., 2020). Furthermore, there are numerous benefits to offering a superior customer experience, including increased purchase intention (Anshu et al., 2022), and improved customer loyalty and satisfaction (Long, 2010; Mascarenhas et al., 2006) and positive word-of-mouth (Pine & Gilmore, 2013). Not surprisingly, customer experience can be a useful metric for measuring the impact of a business transaction's sustainability. By employing the customer experience concept, providers should be able to discover underlying customer experience attributes to build strategies based on customer identification and observation outcomes, thereby making products and services more attractive to customers (Rahardja et al., 2021).

RESEARCH METHOD

In this study, semantic network analysis was utilised to extract meaning from texts by analysing relationships between words to describe a part of a connected network (Ban & Kim, 2019; Zhang & Kim, 2021). As a qualitative method analysis, semantic network analysis can provide a strong theoretical and methodological foundation for describing the semantic nature of customer experience in online food delivery (Handani et al., 2022; Teichert et al., 2020). Compared to quantitative method analysis, it can be useful for determining the internal structure of data, as this method is one of the few that can extract meaning from text (Kim, 2017). Several studies have also stated the benefit of semantic network analysis of providing useful insights and a rich framework with which to analyse spontaneous customer experience information through online customer reviews (Ban & Kim, 2019; Cottica et al., 2020; Zhang & Kim, 2022). This study's procedure was divided into two key parts consisting of data collection and data analysis.

Data collection

The data collection procedure for this study was as follows. Online customer reviews were collected from the Google Play store, selected because it provides the most comprehensive and comparable data on customer experiences. The Google Play store also has publicly available data on online customer reviews and rankings (Furunes & Mkono, 2019). Google Play store reviews include specific information, such as the user's name, rating, review comments, date posted, thumbs up count, reply comments and date of reply. Figure 2 illustrates a specific example of a Google Play store review. Data was collected using a web scraping approach using Python programming language, then exported into a comma-separated values (CSV) format file.
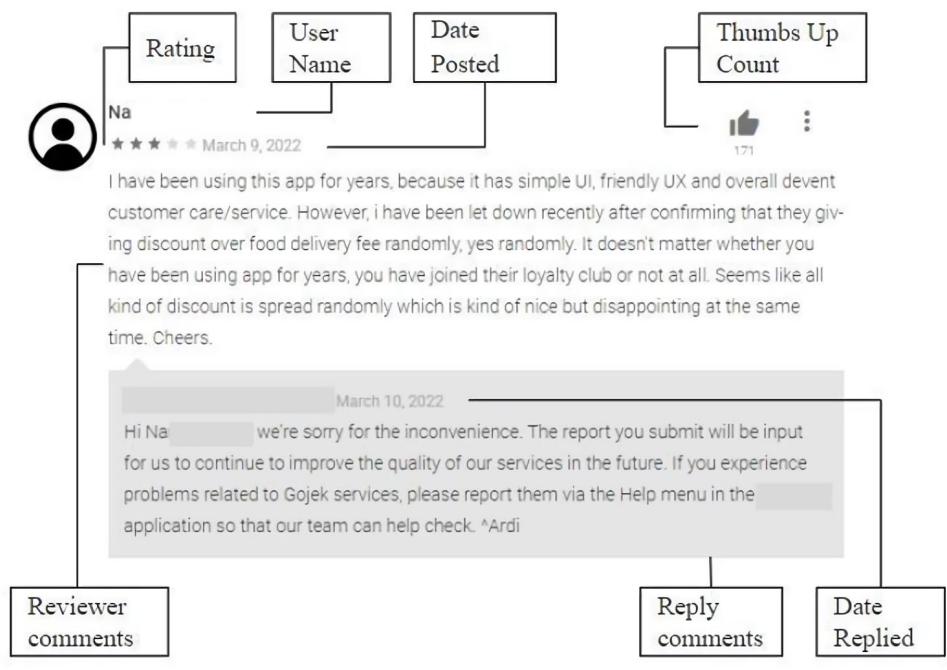
Figure 2. A screenshot of a customer review on the Google Play store

Data analysis

The analysis was conducted in accordance with previous studies (Ban & Kim, 2019; Fu et al., 2022; Kim et al., 2020; Kim & Noh, 2019; Zhang & Kim, 2021). As indicated in Figure 3, the data analysis was divided into three stages. The first stage was data pre-processing through text mining techniques. In this step, the researcher normalised the reviews using Python programming language, for example, by removing a specific character, removing a single character, replacing multiple spaces with individual spaces, converting uppercase characters to lowercase, stemming and stopping word removal. Then, the collected data with sentences were separated into single words based on their relative frequency. The second stage was a semantic

network analysis to deduce the top 100 most frequent words related to customer experience. In line with previous studies, the semantic network analysis was conducted based on a co-occurrence matrix (keywords x keywords) of the top, most frequent words (Tao & Kim, 2019), and the word matrix was determined. The network of words was then visualised using Ucinet 6.0 to demonstrate the connection structure and connectivity between words based on the matrix data. To assist the researcher in determining the significance of the top, most frequent words with their centrality value, the researcher also used Freeman's degree and eigenvector analysis to measure a word's influence in a network. In the third stage, the words were segmented, and the attributes of the online food delivery experience were obtained using a CONvergence of iterated CORrelations (CONCOR) analysis. CONCOR analysis was used multiple times to discover connections and connectivity between words and similarity groups by creating clusters of keywords (Kim & Kim, 2022). Finally, the findings were presented in the form of an intuitionistic visualisation of the clustering of the top, most frequent words used by customers.
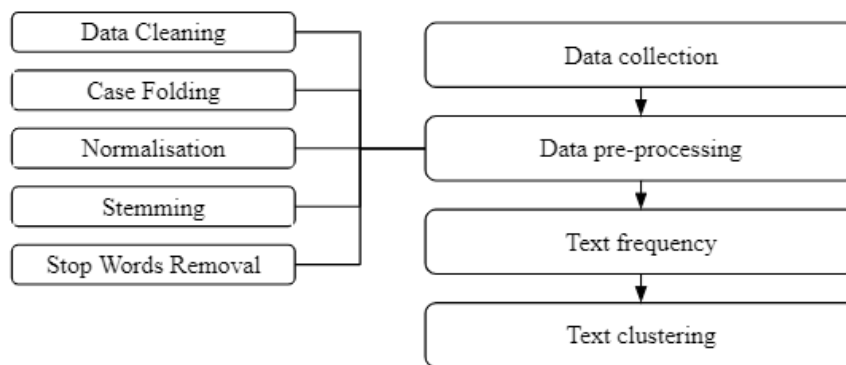
Figure 3. Data analysis of this study

RESULTS AND DISCUSSIONS

Descriptive statistics

Table 1 shows the rating distribution, which is the review provider's overall numeric evaluation of the service and actual experience with online food delivery (Park & Nicolau, 2015; Xiang et al., 2015). The size of the dataset was 45,116 reviews totalling 853,921 words collected and calculated. The average satisfaction rating was 2.707 out of 5, and 36.78% of reviewers indicated a high level of satisfaction with their online food delivery experience by posting a rating of 4 or 5. Meanwhile, 10.96% of customers gave a rating of 3 to their online food delivery experience, indicating that they were dissatisfied. About 52.25% of customers were clearly dissatisfied with their experience, as evidenced by ratings of 1 or 2.

Table 1. Online rating distribution

Rating	Frequency	Percent	Cumulative Percent (%)
1	18894	41.88%	41.88%
2	4681	10.38%	52.25%
3	4946	10.96%	63.22%
4	3957	8.77%	71.99%
5	12638	28.01%	100.00%
Total	45116	100.00%	
Average score: 2.707			

Frequency analysis

The words that emerged in the valid reviews gathered were rated in terms of their frequency. In particular, the top 100 most frequent words representing the online food delivery experience were extracted and sorted, as shown in Table 2. The number and percentage of each word in the total word frequency were calculated, and the words with the highest frequency of occurrence in the reviews were ranked first.

Table 2. Top 100 most frequent words from online reviews

Rank	Word	Freq	Percent	Rank	Word	Freq	Percent	Rank	Word	Freq	%
1	Food	29135	10.75%	35	Home	1791	0.66%	69	Complain	742	0.27%
2	Order	27707	10.23%	36	Error	1742	0.64%	70	Unistal	694	0.26%
3	Driver	18321	6.76%	37	Feature	1699	0.63%	71	Bad	644	0.24%
4	Application	14271	5.27%	38	Location	1684	0.62%	72	Fraud	627	0.23%
5	GrabFood	10593	3.91%	39	Closed	1657	0.61%	73	Delivery	623	0.23%
6	Promotion	9009	3.33%	40	Arrive	1641	0.61%	74	Satisfied	591	0.22%
7	Restaurant	8463	3.12%	41	Fast	1612	0.59%	75	Comfortable	589	0.22%
8	Slow	6779	2.50%	42	System	1588	0.59%	76	Annoyed	587	0.22%
9	Eat	6742	2.49%	43	Balance	1588	0.59%	77	Block	578	0.21%
10	GoFood	5728	2.11%	44	Problem	1428	0.53%	78	Phone	575	0.21%
11	Price	5333	1.97%	45	Distance	1353	0.50%	79	Respond	570	0.21%
12	Cancel	4710	1.74%	46	Address	1344	0.50%	80	Confirm	561	0.21%
13	Purchase	4269	1.58%	47	CustomerService	1337	0.49%	81	Tariff	561	0.21%
14	Customer	4244	1.57%	48	Losses	1319	0.49%	82	Confused	550	0.20%
15	Help	3930	1.45%	49	Rising	1302	0.48%	83	Merchant	522	0.19%
16	Wait	3736	1.38%	50	Lazy	1240	0.46%	84	Free	520	0.19%
17	Service	3681	1.36%	51	Cheap	1238	0.46%	85	Online	512	0.19%
18	Disappointed	3674	1.36%	52	ShopeeFood	1200	0.44%	86	Friendly	507	0.19%

Table 2. Top 100 most frequent words from online reviews (Continued)

Rank	Word	Freq	Percent	Rank	Word	Freq	Percent	Rank	Word	Freq	%
19	ShippingFee	3607	1.33%	53	Hungry	1178	0.43%	87	Halal	499	0.18%
20	Pay	3538	1.31%	54	Nearby	1139	0.42%	88	Subscribe	469	0.17%
21	Update	3478	1.28%	55	Map	1104	0.41%	89	Number	449	0.17%
22	Ovo	3067	1.13%	56	Disappear	1103	0.41%	90	Transaction	410	0.15%
23	Voucher	2999	1.11%	57	GoPay	1091	0.40%	91	Reward	409	0.15%
24	Expensive	2846	1.05%	58	Complicated	1010	0.37%	92	Saving	405	0.15%
25	Account	2688	0.99%	59	Cash	910	0.34%	93	Drink	391	0.14%
26	Easy	2581	0.95%	60	Taste	873	0.32%	94	Install	390	0.14%
27	Far	2581	0.95%	61	Double	870	0.32%	95	Automatic	378	0.14%
28	Rating	2489	0.92%	62	Point	854	0.32%	96	Quick	363	0.13%
29	Discount	2387	0.88%	63	Loading	853	0.31%	97	Parking	362	0.13%
30	Time	2173	0.80%	64	Cold	852	0.31%	98	Photo	360	0.13%
31	Menu	2160	0.80%	65	Notification	807	0.30%	99	Queue	360	0.13%
32	Difficult	2158	0.80%	66	Chat	804	0.30%	100	Good	335	0.12%
33	Thanks	2142	0.79%	67	Busy	797	0.29%				
34	Send	1827	0.67%	68	Night	747	0.28%				

Among the words in Table 2, the words 'Food', 'Order', 'Driver' and 'Application' have the highest visibility. In particular, 'Food' was used 29,135 times, 'Order' was used 27,707 times, while 'Driver' and 'Application' were used 18,321 and 14,271 times. Figure 4 shows the visualisation of the network representing the frequency, with intricate and intertwined connections. These 100 words represent a wide range of aspects of the online food delivery experience. For example, the online food delivery brands, such as 'GrabFood', 'GoFood' and 'Shop Food', have frequency ranks of 5, 10, and 52, respectively. Words related to the value of money, such as 'Promotion', 'Price', 'Voucher' and 'Expensive' also have a high occurrence. Customers' emotions and opinions about online food delivery are expressed through words such as 'Disappointed', 'Easy', 'Difficult', 'Thanks', 'Complicated', 'Comfortable' and 'Annoyed'. The words 'Home', 'Location', 'Point' and 'Map' were also used to summarise a delivery location aspect in their online food delivery experience reviews. The identification of text clusters could be conducted manually; however, Zhang and Kim (2021) suggested that a data-driven method is necessary to investigate the internal and hidden meaning and connections among words. Therefore, a semantic network analysis of the top, most frequent words was conducted to more accurately investigate the hidden meaning within the customer reviews.
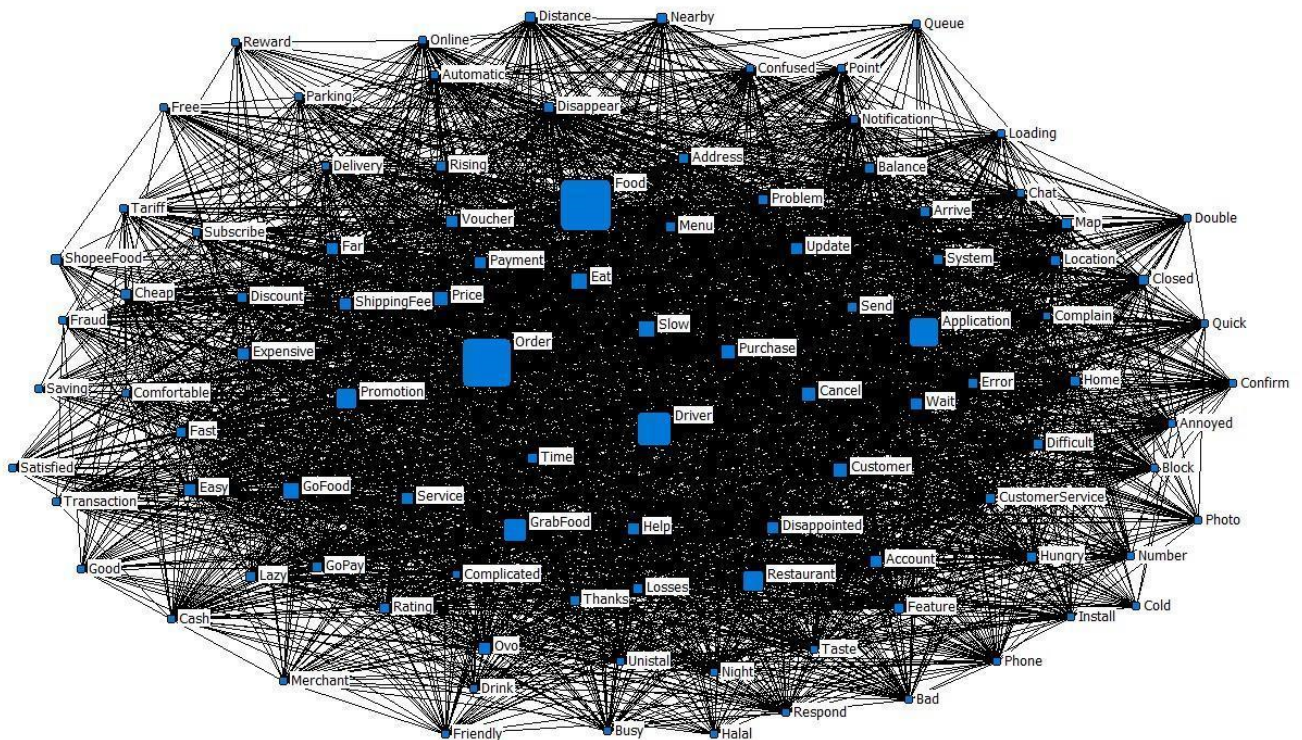
Figure 4. Network visibility of top, most frequent words

Semantic network analysis

A semantic network analysis was conducted to understand the relationships between the keywords (Kim, 2017). In particular, a centrality analysis of keywords and a CONCOR analysis were conducted in this study. Centrality is defined as the 'prominence' of a word within the overall network, and words with higher centrality values represent dominant 'themes' in a text (Tao & Kim, 2019). According to Zhang and Kim (2021), centrality in a network of the top most frequent words can be measured using Freeman's degree centrality and eigenvector centrality. Therefore, these measures were used with the top 100 most frequent words in this study, and the results are shown in Table 3.

Freeman's degree centrality is a measure of the extent to which a word is directly connected to other words in the network (Tao & Kim, 2019b). Despite its simplicity, a degree is frequently a highly efficient measure of a word's influence or importance (Ban & Kim, 2019b). The greater the number of connected words, the greater the degree of connectivity among them (Kim et al., 2020). Meanwhile, eigenvector centrality expands the term connective centrality by considering the number of connected words and the importance of a connected relationship. Several previous studies have also found it to be a useful indicator of the most influential central word in networks (Ban & Kim, 2019a; Ban & Kim, 2019b; Kim, 2017).

Table 3. Comparison between keyword frequency and centrality analysis

Word	Freq	Rank	Degree	Rank	Eigenvec.	Rank	Word	Freq	Rank	Degree	Rank	Eigenvec.	Rank
Food	29135	1	4.057	1	0.618	1	Easy	2581	26	0.182	32	0.033	30
Order	27707	2	2.866	2	0.596	2	Far	2581	27	0.323	16	0.043	22
Driver	18321	3	1.454	3	0.22	4	Rating	2489	28	0.116	47	0.016	48
Application	14271	4	0.961	5	0.134	5	Discount	2387	29	0.214	29	0.038	27
GrabFood	10593	5	0.466	11	0.09	9	Time	2173	30	0.203	31	0.03	32
Promotion	9009	6	0.427	13	0.078	12	Menu	2160	31	0.25	26	0.054	18
Restaurant	8463	7	0.791	6	0.112	7	Difficult	2158	32	0.27	22	0.056	17
Slow	6779	8	0.604	8	0.084	10	Thanks	2142	33	0.106	49	0.015	50
Eat	6742	9	0.522	10	0.077	13	Send	1827	34	0.163	36	0.029	33
GoFood	5728	10	1.408	4	0.261	3	Home	1791	35	0.153	38	0.018	43
Price	5333	11	0.555	9	0.106	8	Error	1742	36	0.206	30	0.041	23
Cancel	4710	12	0.649	7	0.132	6	Feature	1699	37	0.157	37	0.027	34
Purchase	4269	13	0.404	15	0.079	11	Location	1684	38	0.182	32	0.026	35
Customer	4244	14	0.309	19	0.035	28	Closed	1657	39	0.138	41	0.019	39
Help	3930	15	0.245	27	0.039	26	Arrive	1641	40	0.258	24	0.04	25
Wait	3736	16	0.316	17	0.052	19	Fast	1612	41	0.118	45	0.02	37
Service	3681	17	0.305	20	0.048	20	System	1588	42	0.118	45	0.017	44
Disappointed	3674	18	0.221	28	0.035	28	Balance	1588	43	0.102	51	0.01	62
ShippingFee	3607	19	0.457	12	0.068	15	Problem	1428	44	0.128	42	0.019	39
Pay	3538	20	0.303	21	0.047	21	Distance	1353	45	0.165	35	0.025	36
Update	3478	21	0.262	23	0.041	23	Address	1344	46	0.121	44	0.017	44
Ovo	3067	22	0.092	55	0.01	62	Customer Service	1337	47	0.095	54	0.008	68
Voucher	2999	23	0.314	18	0.062	16	Losses	1319	48	0.105	50	0.011	60
Expensive	2846	24	0.413	14	0.069	14	Rising	1302	49	0.141	40	0.017	44
Account	2688	25	0.172	34	0.02	37	Lazy	1240	50	0.107	48	0.019	39

A comparison of the top 50 most frequent words and their centralities is shown in Table 3. The results reveal that 'Ovo' had a high frequency rank of 22, with a rank of 55 for degree centrality and 62 for eigenvector centrality. 'Account' had a frequency rank of 25, with a rank of 34 for degree centrality and 37 for eigenvector centrality. Additionally, several words, such as 'Rating', 'Thanks' and 'Balance', show the same pattern as 'Ovo' and 'Account' with high frequency and relatively low centrality. This finding indicates that those words were frequently

used in customer reviews, but they did not have a strong impact in presenting customer experiences compared with other words because they did not have a strong connection to other words (Zhang & Kim, 2021).

By contrast, words such as 'Expensive', 'Menu' and 'Difficult' had a relatively higher centrality rank and lower frequency rank. 'Expensive' had a frequency rank of 24, with a rank of degree centrality and eigenvector centrality of 14 and 14, respectively. 'Menu' had a frequency rank of 31, with a rank of degree centrality and eigenvector centrality of 26 and 18, respectively. 'Difficult' had a frequency rank of 32, with a rank of degree centrality and eigenvector centrality of 22 and 17, respectively. This finding indicates that although some words had a low frequency, their relationship and effect on other words in the network were of great significance (Fu et al., 2022).

The researcher then used the CONCOR analysis to identify node blocks based on the correlation coefficients of the matrices of concurrent keywords and formed clusters that included similar keywords (Kim & Noh, 2019). A frequency and construct matrix was generated based on the keywords retrieved from the frequency histogram for the CONCOR analysis. Then, NetDraw from the Ucinet 6.0 package was utilised to visualise the findings. The nodes of the words are represented as blue squares, the size indicates their frequency, and the networks indicate their connectedness (Fu et al., 2022). The clusters, which are the semantic network findings utilising the CONCOR clustering method, were then named based on prominent words and their relative meaning in the original reviews (Ban & Kim, 2019b). Figure 5 shows the visualisation of the CONCOR analysis, which included four cluster groups. Considering the characteristics of the words, the names of the cluster groups were decided as follows: delivery procedure, OFD (online food delivery) platform, payment process and value of money. Additionally, Table 4 also displays the words in the cluster to make it easier to see which words belong to which cluster.

The first cluster is 'Delivery Procedure', which contains terms related to the food delivery worker, delivery address, and provider that supplies the goods. Among the words in this cluster are 'Friendly', 'Slow', 'Respond', 'Confirm', 'Map', 'Address', 'Location', 'Merchant', 'Closed', 'Restaurant' and so on. Those words also had a high frequency. For example, 'Restaurant' was used 8,463 times and had a rank of 7, and 'Slow' was used 6,779 times and had a rank of 8. The results for this cluster are in line with those of a previous study by Ray et al. (2019), finding that the delivery experience related to locating the delivery address on a map and the ability to track estimated delivery distance both played an important role in the usage

of online food delivery. For delivery procedures, clear communication was also an essential and valued attribute for customers (Kumar & Anjaly, 2017). As Ha and Stoel (2009) stated, a positive delivery experience encourages consumers through increased satisfaction and delight in achieving their main online purchasing goal.
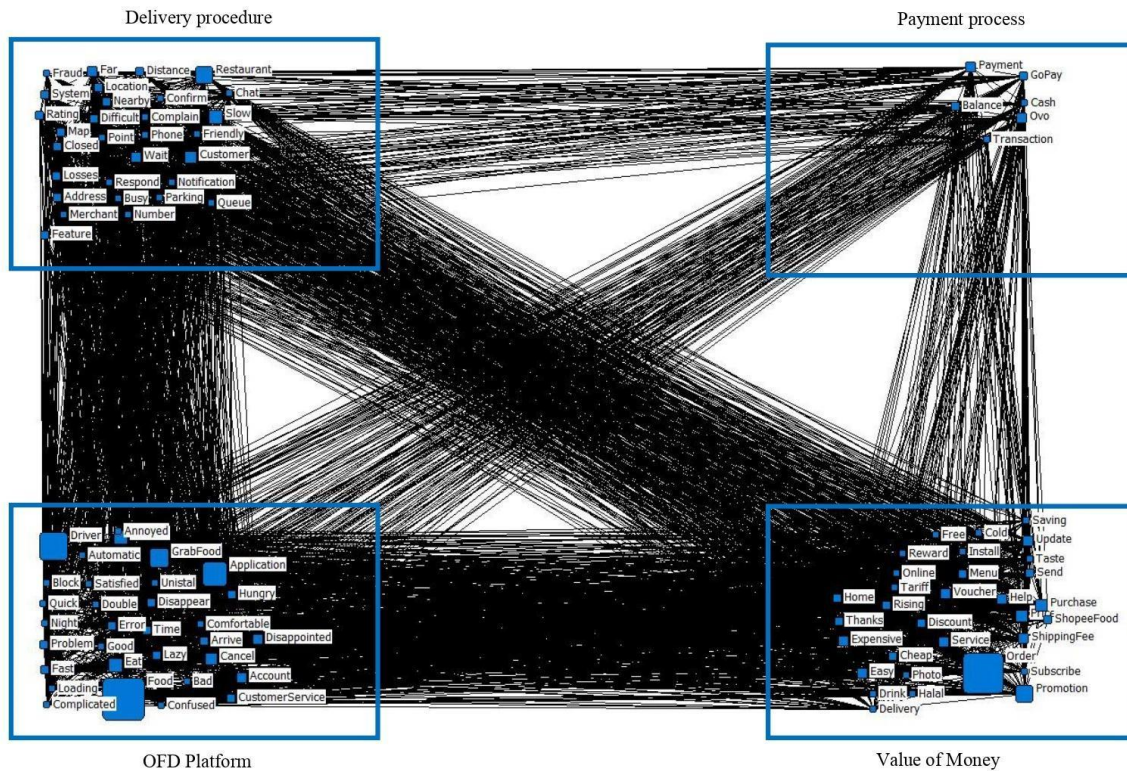

Figure 5. Visualisation of CONCOR analysis

The second cluster is 'OFD Platform', which includes terms related to the OFD platform brand, customer feeling toward the OFD platform and the performance of the OFD platform. This cluster includes terms such as 'GoFood', 'GrabFood', 'Good', 'Confused', 'Disappointed', 'Loading', 'Error' and so on. These words also had a relatively high frequency among the top 100 most frequent words. For example, 'Cancel' was used 4,710 times and had a rank of 12, and 'Disappointed' was used 3,674 times and had a rank of 18. The results of this cluster are consistent with those of Wang et al. (2021) finding that the experience related to platform quality has a significant impact on both customer trust and platform satisfaction, which, in turn, affects customers' willingness to continue using it. Wu and Wang (2005) emphasised that the platform enterprise should make using the platform easy and clear to ensure that ordering food is attractive to consumers in the future.

The third cluster is 'Payment Process', which includes terms related to payment for the order, such as 'Pay', 'GoPay', 'Balance', 'Cash', 'Ovo' and 'Transaction'. Teichert et al. (2020) highlighted the importance of the payment process experience during online food delivery transactions. The usage of digital payment allows customers to experience a fast and convenient purchasing transaction (Slade et al., 2013) and became even more popular during the pandemic because it reduced customer contact with delivery partners (Nguyen & Vu, 2020). Mehrolia et al. (2020) also revealed that digital payment for online food delivery regularly provides interesting cashback offers or reward points for discounts, perceived benefits which push customers to use and experience online food delivery.

These results are consistent with those for the fourth cluster, representing the 'Value of Money', which includes the terms 'Saving', 'Price', 'Voucher', 'Discount', 'Promotion' and so on. In line with Prasetyo et al. (2021), online food delivery platforms regularly offer numerous promotions, such as discount coupons and free shipping to attract customers' purchase decisions (Raghubir, 2004). In addition, as part of the 'Value of Money', the price plays an important role for customers when making online food delivery purchases. In particular, customers' attitudes regarding online food delivery may be affected by the amount of money they save by using it. The more money a consumer saves or the lower the price, the more likely they are to use online food delivery (Prabowo & Nugroho, 2019). However, customers may have the intention to use and experience online food delivery but may cancel an order if the price is too high.

Table 4. CONCOR analysis result

	Extracted Words	Significant Words
Delivery procedure	Fraud/System/Rating/Map/Closed/Losses/ Address/Merchant/Features/Far/ Location/Nearby/Difficult/Point/Respond/Busy/ Number/Distance/Confirm/Complain/Phone/Wait/ Restaurant/Chat/Slow/Friendly/Customer/ Notification/Parking/Queue	Fraud/System/Map/Closed/Losses/Address/ Merchant/Far/Location/Nearby/Difficult/Point/ Respond/Number/Distance/Confirm/ Complain/Phone/Wait/Restaurant/Chat/Slow/ Friendly/Notification/Parking/Queue
OFD Platform	Good/Time/Confused/Food/GoFood/Block/ Disappointed/Automatic/Loading/Account/ Customer Service/Quick/Complicated/Uninstall/ Eat/Lazy/Hungry/Comfortable/Annoyed/ Disappear/Problem/Night/Cancel/Arrive/Double/ GrabFood/Error/Bad/Application/Driver/Satisfied/ Fast	Good/Time/Confused/Food/GoFood/Block/ Disappointed/Automatic/Loading/Account/ Quick/Complicated/Uninstall/Comfortable/ Annoyed/Problem/Cancel/Double/GrabFood/ Error/Bad/Application/Satisfied/Fast

Table 4. CONCOR analysis result (Continued)

	Extracted Words	Significant Words
Payment process	Pay/GoPay/Balance/Cash/Ovo/Transaction	Pay/GoPay/Balance/Cash/Ovo/Transaction
Value of Money	Saving/Update/Taste/Send/Help/Purchase/ ShopeeFood/Price/Shipping Fee/Order/ Subscribe/Promotion/Cold/Install/Menu/Voucher/ Discount/Service/Free/Reward/Online/Tariff/ Rising/Home/Thanks/Expensive/Cheap/Easy/ Photo/Halal/Drink/Delivery	Saving/Purchase/Price/Shipping Fee/Order/ Subscribe/Promotion/Voucher/Discount/ Free/Reward/Tariff/Rising/Expensive/Cheap

These results concerning the four clusters of customer experience attributes, 'Delivery Procedure,' 'OFD Platform,' 'Payment Process,' and 'Value of Money', provide an overview of the common attributes of online customer reviews of online food delivery in Indonesia. As most customers are more interested in these attributes, online food delivery enterprises should focus on developing and improving them as a marketing strategy. For instance, online food delivery enterprises can enhance the operation of delivery procedures, the online food delivery platform and the payment process to provide customers with a high-quality experience when using the online food delivery service or platform. As part of the 'Value of Money' cluster, enterprises could also use promotion as a marketing tool to influence customers' purchasing decisions (Prasetyo et al., 2021).

MANAGERIAL IMPLICATIONS IN THE SOUTH EAST ASIAN CONTEXT

This research has several implications for managerial practices. First, with respect to attributes related to the 'Delivery Procedure' cluster, an online food delivery enterprise may consider the ability to respond immediately to a wide range of customer demands, as it has a critical impact on the intention to use and reuse the service, as well as improvement of the customer experience in the context of online food delivery. Second, attributes associated with the 'OFD Platform' cluster could encourage online food delivery enterprises to improve the platform's quality and performance to improve customer experience. Third, attributes associated with the 'Payment Process' cluster may serve as a lesson to online food delivery enterprises to avoid customer discomfort throughout the payment process. Food delivery enterprises should also consider cooperating with financial technology enterprises to deliver easy and emotionally engaging payment options. They may also offer promotions, vouchers and discounts as attributes related to

the 'Value of Money' cluster, a significant marketing technique for attracting new customers and providing great online food delivery experiences.

Based on these managerial implications, online food delivery enterprises could make the advantages of online transactions more tangible compared to traditional retail, as they can provide lower costs, save time and attend to emotional connections, such as more convenient and positive experiences during online transactions, which can assist in building a sustainable sharing economy of online food delivery in the face of fierce competition. Furthermore, given the predicted growth of online food delivery in Southeast Asia (Momentum Works, 2021), the management implications of this study may be expanded to other online food delivery in Southeast Asia, as most nations in the region share cultural values (Dewi & Sjabadhymi, 2021; Diefenbach, 2016). Similar findings from several countries show that some of these attributes are already being used to enhance the customer experience in online food delivery. For instance, the Philippines is working to improve food delivery procedures (Janairo, 2021; Limon, 2021). Malaysia provides improved delivery procedures and online food delivery platform performance as well as reasonable pricing (Ilayas et al., 2021; Kok & Kim, 2021). Vietnam also provides payment convenience and better cost and procedures for delivery (Nguyen et al., 2021; Tran, 2021).

THEORETICAL IMPLICATIONS

This study contributes to the existing literature by offering a meaningful and reliable assessment of customer experience by expanding the semantic network analysis application field. The study findings can expand knowledge and serve as a standard for academics and stakeholders with respect to the attributes of customer experience in the context of the sharing economy of online food delivery. In a context of intense competition in the online food delivery sector, this study reveals the underlying attributes of the customer experience through big data by explaining online reviews as an expression of customer experience. Identifying these key attributes would assist the online food delivery sector in achieving positive repurchase intention and increasing revenue (Anshu et al., 2022). As shown by Kim and Kim (2022), online reviews give stakeholders an effective way to receive customer feedback and learn how to encourage positive repurchase intentions after the experience. Keiningham et al. (2020) added this study also provides insight into a rigorous and viable approach that researchers and managers can use to guide customer experience-driven innovation.

Furthermore, the use of semantic network analysis in this study is valuable in that it fills a methodological gap. As Christensen and Kenett (2020) stated, the application of semantic network

analysis in academic research is currently limited. One impediment to wider adoption is a lack of resources for academics to become familiar with the method. Another obstacle is that pre-processing semantic data (e.g. spell-checking, deleting unsuitable replies, and homogenising reviews) is laborious and time-consuming. However, semantic network analysis offers many advantages. It has the capacity to analyse large amounts of unstructured data that traditional data categorisation and analysis methods cannot handle (Jung & Lee, 2020). Ultimately, the attributes obtained from semantic network analysis in this study comprised meaningful words related to customers' opinions and assessments of their experiences that can serve as the foundation for understanding the truth of their experiences. Finally, it could be a useful resource for academics who want to learn more about the underlying attributes of customer experience in online food delivery and extend the use of semantic network analysis.

Aside from its contribution, this study has certain limitations. This study collected only online customer reviews from the Google Play store. Therefore, future research could address this restriction by collecting data from numerous social media sites and comparing findings across platforms to acquire a more comprehensive and deep understanding of the underlying attributes of customer experience. Furthermore, because the method used in this study was primarily focused on the frequency of words, it is difficult to understand the additional meaning of the words. Future research could also gain a deeper understanding by employing regression analysis to determine the importance of each customer experience attribute in influencing satisfaction and provide a more meaningful understanding of customer experience and satisfaction in the online food delivery sector.

CONCLUSION

This study utilised semantic network analysis to reveal the underlying attributes of the customer experience of food delivery services by collecting online review data from Google Play store for four major online food delivery enterprises in Indonesia, including GoFood, GrabFood, ShopeeFood and TravelokaEats. This study examined 853,921 words from 45,116 reviews, which were pre-processed with the Python programming language and then analysed with Freeman's degree centrality and eigenvector centrality using Ucinet 6.0 packaged with Netdraw. The findings were then extracted and sorted to identify the top 100 most frequent words associated with the online food delivery experience. CONCOR analysis was then utilised to cluster the keywords of similar online reviews. During the CONCOR analysis, the top 100 most frequent words were divided into four clusters: 'Delivery Procedure', 'OFD Platform', 'Payment Process', and 'Value of Money'.

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