

THE KANO MODEL: HOW THE PANDEMIC INFLUENCES CUSTOMER SATISFACTION WITH DIGITAL WALLET SERVICES IN INDONESIA

Vanesa Hana Budiarani^{1*}, Rahmat Maulidan¹, Diki Putra Setianto¹ and Ipuk Widayanti¹

¹ Department of Management, Faculty of Economics and Business, Universitas Gadjah Mada, Yogyakarta, 55281, Indonesia

ABSTRACT

Introduction/Main Objectives: This study aims to evaluate the effectiveness of digital wallets service qualities using Kano Model. Understanding customer needs and satisfaction is crucial in developing products. **Background Problems:** In the “new normal” era, payment method is predicted to shift to digital wallets. For quality improvement, digital wallet companies should understand customer needs and satisfaction. This study used the Kano model to analyze customer needs and satisfaction in OVO and ShopeePay, two digital wallets widely used for online shopping transactions during COVID19. **Novelty:** Although studies into the Kano model implementation towards e-commerce exist, there are no specific studies on the model implementation concerning digital wallet payments amid COVID-19. The Kano model is significant in understanding which software products generate high customer satisfaction, which will give a greater influence, as well as necessary attributes for the customers. **Research Methods:** This study employed the Kano model as one of the most relevant method to measure customer satisfaction by measured of each attribute’s quality. **Finding/Results:** Most features of OVO and ShopeePay are categorized into the “must be” and “one dimensional” category. The satisfaction map results indicate that most items placed in the “indifferent” quadrant denote the unfulfilled customer expectations. **Conclusion:** OVO and ShopeePay should improve the items placed in the “indifferent” quadrant first. This study contributes empirically and theoretically by emphasizing the Kano model’s utility for digital wallet services and providing new insights for digital wallet companies and the government on Indonesians’ usage of digital wallets in the “new normal”.

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¹ Corresponding Author at Department of Management, Faculty of Economics and Business, Universitas Gadjah Mada, Jalan Socio Humaniora No. 1, Yogyakarta 55281, Indonesia.
E-mail address: vanesa.hana@mail.ugm.ac.id (author#1), rahmat.maulidan@mail.ugm.ac.id (author#2), diki.putra.s@mail.ugm.ac.id (author#3), ipuk.widayanti@mail.ugm.ac.id (author#4)

INTRODUCTION

Since December 2019, the COVID-19 pandemic has changed the way people live and conduct financial transactions. With the rising COVID cases in Indonesia from March 2020 onwards, the central government ordered the large-scale social restrictions (Pembatasan Sosial Berskala Besar - PSBB) to prevent the contagion. Moreover, Bank Indonesia attempted to prevent the viral transmission by encouraging the public to use non-cash payments for daily transactions. Following these notices, people have adapted by using digital wallets (dompet digital) as their day-to-day transaction method.

As reported by MarkPlus Inc. and Nielsen, a rising number of digital wallet users and transactions occurred in Indonesian society. Most digital wallet platforms, DANA, OVO, and ShopeePay, announced a growing number of active and new users, as well as transactions, since the pandemic occurred in Indonesia. ShopeePay announced a 500% increase in the transactions it accommodated, while OVO reported a 150% increase in transactions. Furthermore, GoPay announced a large increase in each type of transaction it accommodated; DANA announced a significant growth (up to 15%) in transactions and active users to May 2020.

Moreover, the number of people shopping online through e-commerce, especially Tokopedia, Shopee, and Bukalapak has increased. Based on these facts, the researchers undertook a survey to observe the increasing new digital wallet users in Indonesia and the types of transactions most used by users during the pandemic from March to May 2020. The results showed a rising frequency of digital wallets usage from 1 to 5 times to 6 to 10 times a week. Most respondents used the OVO and ShopeePay digital wallets as payment methods in shopping online.

Accordant with the results of this study, research by Young, (2020), Boston Consulting Group (July 2020), and Indonesia Investment (June 2020) showed that in the “new normal” era, the payment methods shifted to digital wallet transactions. In 2014, Bank Indonesia implemented the national non-cash movement (Gerakan Nasional Non-Tunai), influencing the way people responded to digital payments as the new method and replaced cash payments in the “new normal” era. Therefore, digital wallet companies must understand the customers’ wants and needs for digital wallets as they are predicted to become more widespread than cash payment. Furthermore, as the competition between digital wallets increases, digital wallet companies must ascertain the customers’ wants and needs to obtain their satisfaction.

This study used the Kano model to identify the customer needs, extent of their satisfaction and dissatisfaction in the features of OVO and ShopeePay, and features that digital wallets companies should invest into improve the services quality. Based on works by Berger et al., (1993); Elmar Sauerwein, Franz Bailom, Kurt Matzler, (1996); Gailevičiūtė, (2011); and Qiting et al., (2005), the Kano model is one of the strongest and most relevant methods to determine and adjust the level of customer satisfaction compared with the SERVQUAL model proposed by Parasuraman et al., (1988). Kano model measures customer satisfaction based on their wants and needs by assessing and analyzing the product/services’ quality attributes, while other models (including SERVQUAL) do not consider the customers’ wants or needs. Eventually, the results of this study are expected to help digital wallet companies identify the customer basic wants and needs. Therefore, digital wallets can become one of the main payment methods in the “new normal” era, helping the companies decide

which attributes worth investing to improve their services quality and customer satisfaction.

1. Problem Recognition and Research Questions

With the increasing new users and transactions of digital wallets in Indonesia, the researchers undertook a survey to observe these users and the types of transactions used most by digital wallet users during the pandemic from March to May 2020. The results showed an increased frequency of digital wallets usage from 1 to 5 times a week to 6 to 10 times a week. Most respondents used either the OVO or ShopeePay digital wallets as medium for online shopping transactions.

2. Novelty of the Research and Research Objectives

Due to the increasing competition between OVO and ShopeePay among developing digital wallets, this research used the Kano model to identify customer needs, customer satisfaction or dissatisfaction in the features of OVO and ShopeePay, and which features the companies should develop to improve the quality of their digital wallet services. Similar research concerning the use of Kano model for measuring consumer satisfaction was conducted by Ingaldi & Ulewicz, (2019) and Kodó & Hahn, (2017); three of the studies focused on mobile payments in Sweden, e-commerce in Poland, and banking services in India as the research subject. To test the Kano model through other types of payment systems, especially online shopping platforms, this research used digital wallets as the research object. Product development shifted from manufacturer-oriented to being customer-led. From customer's perspective, Kano model is used to understand customer needs by identifying and classifying the quality attributes of the product (Kano, 2001). In recent years, the number of

studies using the Kano model has increased substantially, but quantitative research, classification criteria, and decision support require improvement (Lin et al., 2017; Shahin, Pourhamidi, Antony, & Park, 2013). An implementation study of the Kano model is unprecedented in Indonesia and internationally, in terms of digital wallet payments, as the demographic profile of Indonesian customers differ from other countries. In this study, the authors focused on the digital wallet services in Indonesia that accommodates e-commerce transactions during the pandemic (March to May 2020) as the basis of the research object. Besides basing on the pilot study results, the researchers sought the phenomenon of customers' convenience in receiving products on their doorstep with the click of a finger through e-commerce services. E-commerce has become the social norm in Indonesia, with the number of online shoppers has grown to 85 million, affecting digital wallets usage as one of the transaction methods. Therefore, the researchers sought to elaborate the growing use of digital wallets during COVID-19 and their effect on customer satisfaction.

Previous research conducted in developed countries under normal environmental conditions (before the COVID-19 pandemic), with other research objects. This research examined the Kano model implementation in developing countries under a considerably abnormal environment due to COVID-19, with research objects related to the pandemic. Hence, the reasons above can become the research gap from previous studies. The study aims to identify the user needs, features that OVO and ShopeePay can improve, and to increase satisfaction level. This research will contribute theoretically by emphasizing the Kano model's utility to identify customer needs and the extent of their satisfaction and dissatisfaction concerning online

shopping and digital wallets, which has been unprecedented in prior studies. Practically, this study will contribute by giving new insights into the digital wallets' usage in Indonesia amid COVID-19, helping the government decrease the number of cases in Indonesia and help digital wallet companies increase the quality of their features.

LITERATURE REVIEW

The literature related to customer satisfaction and the Kano model is presented under the following topics:

1. Customer Satisfaction

Customer satisfaction is one of the main concepts in the literature and practices of modern marketing. Customer satisfaction is also one of the main aspects that will develop customer loyalty, generating a competitive advantage for organizations (Ažman & Gomišček, 2012; Eric, John, & Nicolas, 2016).

Customer satisfaction is the result of a product's quality and viability (Mkpojiogu & Hashim, 2016). For customers of a software product, customer satisfaction should not be neglected as it can drive the customer loyalty and provide high profitability and returns on investment (Chaudha, Jain, Singh, & Mishra, 2011). Hence, companies need to measure their customer satisfaction. Gaining awareness of customer expectations on a product or service based on their view of the quality attribute is essential (Issac, Rajendran, & Anantharaman, 2006). Understanding product quality attributes can improve the quality and further develop the product (Zhu & Tsai, 2010). One of the measurements to calculate customer satisfaction is the Kano model. Gustafsson et al., (2005) suggested that Kano model is a tool to identify customers' wants and needs and the features

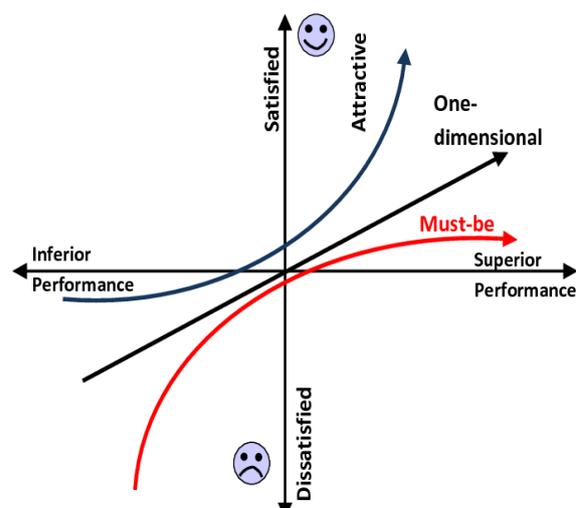
they require to fulfill their expectations, thereby affecting customer satisfaction.

2. Kano Model

The Kano model was introduced by Noriaki Kano in 1984 and was formed based on the attractive quality theory developed from the motivation theory of Herzberg et al., (1959). Kano et al., (1984) argued that the attractive quality theory is one of the best theory to measure and explain the role of quality attributes for product or service. Since publicly introduced in 1984, the model has been significant in the literature and practices that helped organizations improve customer satisfaction based on their customer needs and expectations, as well as innovate, through the products or services offered.

Berger et al., (1993) expressed the Kano model's several advantages compared with other forms of measurement, namely:

1. Based on the quality attributes of a product or service, the Kano model's measurement is illustrated by a map of performance (horizontal axis) and customer satisfaction (vertical axis).



Source: Berger et al., (1993)

Figure 1. Map of Performance and Satisfaction

2. A questionnaire based on functional and dysfunctional approaches to the product or service measures the customer needs. Both approaches function to verify customers' opinion about the features of the products or services consumed. The questionnaire results are adjusted to the Kano Evaluation Table 1 illustrated below.

Based on the Kano Evaluation Table above, product or service's attributes will be classified into three categories, namely:

- Must be attribute: This attribute is the basic product/service requirement from the customers' perspective. The customers expect this attribute, and they never express it as it must be served appropriately to them.
- One dimensional attribute: The customers expect this attribute fulfilled and it can generate satisfaction and reduce dissatisfaction; unfulfillment will cause dissatisfaction and reduce satisfaction.
- Attractive attribute: the customers express their expectation on this attribute. Fulfilling it generate satisfaction, but unfulfillment will not cause disappointment.

3. Kano Methodology

In previous studies, a widely used Kano methodology was proposed by (Matzler & Hinter-

huber, 1998). The author recommended four main steps for this Kano methodology, namely:

1. Identification of customers' wants and needs

Potential customers must be recognized with their wants and needs for a product or service. Afterwards, the customers' wants and needs are identified through the implementation of various techniques and approaches.

2. Construction of Kano Questionnaire

The questionnaire should be developed based on the customers wants and needs. It consists of two groups of questions, namely the functional and dysfunctional forms (Berger et al., 1993), illustrated in the Figure 2 below.

In this study, the customer experience approach was applied to identify the customers' wants and needs, while the questionnaire was adapted from a previous study by Martin et al., (2015) that applied the customer experience approach. This study measures ten dimensions of the digital wallet attributes offered by OVO and ShopeePay, namely: connectedness, customization, ease of use, aesthetics, perceived benefit, perceived control, affective, trust, perceived risk, and satisfaction.

Table 1. Kano Evaluation Table

Customer requirements		Dysfunctional				
		1. Like	2. Must be	3. Neutral	4. Live with	5. Dislike
Functional	1. Like	Q	A	A	A	O
	2. Must be	R	I	I	I	M
	3. Neutral	R	I	I	I	M
	4. Live with	R	I	I	I	M
	5. Dislike	R	R	R	R	Q

Customer requirements are:

A : Attractive O : One dimensional
M : Must be Q : Questionable result
R : Reverse I : Indifferent

Source: Sauerwein (1996, adapted from Kano et al., 1984)

Figure 2. Questionnaire Type of Questions

Functional form of the question	
How do you feel when the availability of the machine is high?	1. I like it that way
	2. It must be that way
	3. I am neutral
	4. I can live with it that way
	5. I dis like it that way
Disfunctional form of the question	
How do you feel when the availability of the machine is low?	1. I like it that way
	2. It must be that way
	3. I am neutral
	4. I can live with it that way
	5. I dis like it that way

Source: (Berger et al., 1993)

3. Administering the questionnaire to the customers

The developed questionnaire was administered to the customers. For this purpose, the questionnaire was administered online through Google Forms.

4. Interpretation and evaluation of the results

After receiving the questionnaire feedback from the customers, each questionnaire analyzed using the Kano Evaluation Table before the in-depth analysis; the table distributes each response into six requirements categories (one dimensional, must be, attractive, reverse, questionable, and indifferent). Various in-depth analysis approaches for the Kano results have been defined by prior studies. To interpret the results, this study applied Blauth’s formula approach (Walden, 1993 on Gailevičiūtė, 2011) listed as follows:

- If (one dimensional + attractive + must be) > (indifferent + reverse + questionable), the attribute will be classified into one of the maximum numbers of the Kano Model categories attributes (one dimensional, attractive, must be)
- If (one dimensional + attractive + must be) < (indifferent + reverse + questionable), the attribute will be classified into

one of the maximum numbers of the Kano Model categories attributes (indifferent, reverse, questionable)

After the classification into one of the categories, customer satisfaction is measurable by the customer satisfaction coefficient.

4. Customer Satisfactions Coefficient

(Berger et al., 1993) proposed that the customer satisfaction coefficient states whether satisfaction can be increased by fulfilling the customers product requirements which merely prevents customers dissatisfaction. The customer satisfaction coefficient indicates how products or service features influence customer satisfaction or dissatisfaction. The formula suggested by Berger et al., (1993) to calculate the extent of satisfaction or dissatisfaction has been mentioned in numerous studies into the Kano model (Lubinski & Oppitz, 2012; Matzler & Hinterhuber, 1998; Wang et al., 2016 and Zhai et al., 2011). To calculate the extent of the satisfaction and dissatisfaction coefficients, the formula below is used:

Extent of Satisfaction:

$$\frac{\text{Attractive} + \text{One Dimensional}}{\text{Attractive} + \text{One Dimensional} + \text{Must Be} + \text{Indifferent}}$$

Extent of Dissatisfaction:

$$\frac{\text{One dimensional} + \text{Must Be}}{\text{Attractive} + \text{One Dimensional} + \text{Must Be} + \text{Indifferent} \times (-1)}$$

Positive customer satisfaction coefficients range from 0 to 1. The closer the value gets to 1, the higher the influence on customer satisfaction. The negative customer dissatisfaction coefficients range from 0 to -1. The closer the value gets to -1, the higher the influence on customer dissatisfaction.

5. Questionnaire Adaptation

In this study, the questionnaire was adapted based on the study conducted by Martin et al., (2015) where they developed the questionnaire based on the model by Rose et al., (2012) that included: cognitive experiential state (challenge and telepresence dimensions), affective experiential state (ease of use, customization, connectedness, aesthetic, perceived benefits dimensions), trust, perceived risk, and satisfaction. The cognitive experiential state construct was developed based on the previous research by Hoffman & Novak, (2009). The authors did not include the cognitive experiential state in their questionnaire adaptation for several reasons. First, based on the literature review and research related to the flow of the cognitive experiential state's antecedents (challenge and telepresence), Hoffman & Novak, (2009) suggested that no sufficient studies had been undertaken to test the validity of these construct dimensions. It was mentioned that the construct of telepresence and challenge does not have to be included in any further studies. Second, the authors adapted the questionnaire based on the Institut de Publique Sondage d'Opinion Secteur (IPSOS) report from February 2020. IPSOS conducted a study elaborating the digital wallet evolution in Indonesia from December 2019

until January 2020. In that study, Indonesian society was largely motivated to use e-wallets for their convenience (including ease of use, customization, connectedness, aesthetics, and perceived benefit dimensions), and safety (perceived control, trust, and perceived benefit dimensions). The study indicated that digital wallet usage gave the users feelings of an affective experiential state, generating customer satisfaction in the service. Based on the study conducted by IPSOS and Hoffman & Novak (2009) above, the authors adapted and developed the questionnaire to include these dimensions: ease of use, aesthetics, perceived benefit, connectedness, customization, perceived control, affective, perceived risk, trust, and satisfaction.

METHOD, DATA, AND ANALYSIS

1. Research Design

This study is designed to examine the growing use of digital wallets during the COVID-19 outbreak, its impact on customer satisfaction, and the development of digital wallet service attributes (OVO and ShopeePay) using Kano model. This study was conducted with the wallets' users provided by OVO and ShopeePay who have used one of the two services for online shopping transactions during the COVID-19 outbreak (March to May 2020) with Kano model as the research object.

2. Research Context

Before the study was carried out, a pilot study was conducted to analyze the developing digital wallets usage and the most frequent types of transactions during the pandemic. A questionnaire was developed to conduct this study, including questions concerning the intensity of digital wallets usage during the pandemic, time of digital wallets usage, types of digital wallet platforms used, customers' spending using digital wallets, and the types of transaction. This

questionnaire was administered to 103 digital wallet users during the COVID-19 outbreak (March to May 2020). According to the pilot study results, most digital wallet users shop online using OVO and ShopeePay as the service platforms for their transactions. Accordingly, the study took online shopping activities with the OVO and ShopeePay transaction media as the research subject.

3. Population and Sample

A population is an entire group of objects, events, or people with identical characteristics that a researcher would like to discover (Sekaran and Bougie, 2016). A population contains all elements that a researcher wants to study (Cooper and Schindler, 2014). Before a study is conducted, the population should be well-defined. The sample size should represent the overall population. In this study, the population was the digital wallets users (OVO and ShopeePay) who used the platforms for online shopping amid COVID-19 from March to May 2020.

This study used a non-probability sampling of “purposive sampling method”, referred to as a sampling method with certain criteria justified for the research (Cooper and Schindler, 2014).

In this study, the respondents were OVO and ShopeePay users who had used their services for online shopping during the pandemic (March to May 2020). Hair et al (2014) suggested that the sample size is justifiable based on the indicators measured in the study, multiplied by 10. In this study, the research elements measured contained 29 items; therefore, 290 respondents were sought to answer the questionnaire.

4. Data Collecting

The data measured in this study were primary data. Primary data are data collected from

primary sources concerning the variable of interest for the specific purpose of the study (Sekaran and Bogie, 2016). Cooper and Schindler (2014) argued that primary data are a type of data collected directly from the source without a second party’s interpretation. In this study, the data collected by using online self-administered survey through Google Forms.

An instrument test is required to ensure the validity and reliability of the instrument variables in this study through a validity and reliability test. The indicators for each construct should have a loading factor that significant to the loading factor of the item being measured. In this study, the instrument validity test was conducted using exploratory factor analysis (EFA) with SPSS for Windows version 22 software, where each item being measured should had a loading factor of 0.5 to 0.7 (Hair *et al.*, 2014). In the EFA test, the rotated component matrix was also measured. Furthermore, the instrument of this research also used Confirmatory Factor Analysis (CFA). This test was performed with Analysis of Moment Structures (AMOS) to test the construct validity that included convergent validity and discriminant validity testing in the first and second order of CFA to evaluate the model’s measurement. The convergent validity parameter in this test was the average variance extracted (AVE) value. The value of AVE was expected to be greater than 0.5, indicating that half of the constructs defined the indicators (Hair et al., 2014). The Root Mean Square Error of Approximation (RMSEA) value should show a goodness of fit result to measure the population using the model estimation.

In this study, an internal consistency test was conducted to observe the reliability of the measuring instruments (Cooper and Schindler, 2014), with the Cronbach’s alpha value must be 0.7, or greater (Hair et al., 2014).

5. Measurement

The questionnaire was adapted based on the study by Martin et al., (2015), developed from the studies of Rose et al., (2012). In this study, ten items dimensions were measured and listed as: ease of use, aesthetics, perceived benefit, connectedness, customization, perceived control, affective, perceived risk, trust, and satisfaction. The dimensions measured were validated by the previous study by Hoffman & Novak (2009) and IPSOS (Institut de Publique Sondage d'Opinion Secteur) report (2020).

To fill out the questionnaire, the respondents, (OVO or ShopeePay's users) who used one of the service platforms for online shopping, determined the importance level of each attribute item using the Kano model on a scale of 1 to 5 through the following steps:

- Step 1

This step generates a list of questions for the functional form of each attribute, where the scales were defined as follows:

- Scale 1: I like it that way
- Scale 2: It must be that way
- Scale 3: I am neutral
- Scale 4: I can live with it that way
- Scale 5: I dislike it that way

- Step 2

This step generates a list of questions for the dysfunctional form of each attribute, where the scales were defined as follows:

- Scale 1: I dislike it that way
- Scale 2: I can live with it that way
- Scale 3: I am neutral
- Scale 4: It must be that way
- Scale 5: I like it that way

After the form had been filled, each item was tested for its validity and reliability. If the item passed the test, each response was processed into the Kano Model Evaluation Table to determine

the category of each item; the customer satisfaction coefficient was then measured.

RESULT AND DISCUSSION

1. Pilot Study

The pilot study was conducted on 103 respondents and showed that most respondents used digital for online shopping. The researcher targeted a sample of 100 respondents for inflation rate factor of sample size is 1.287 with a 90% confidence level based on UCL (Upper Confidence Limit) Approach calculations (Whitehead, Julious, Cooper, & Campbell, 2015). The pilot study was conducted in June 2020 to observe the behavior of digital wallets users in Indonesia during the COVID-19 outbreak from March to May 2020.

The results of the pilot study showed that the majority of the respondents were female (65%), mostly live in Java, and are college students. 88.3% of respondents used digital wallets to accommodate their daily transaction from March until May 2020, and only 80.6% of respondents solely used the platforms for their online shopping transactions. Meanwhile, the most widely used digital wallet platforms are GoPay, OVO, and ShopeePay. Since GoPay is not affiliated with any e-commerce platform in Indonesia, it was not included as research subject. Therefore, the researchers targeted OVO or ShopeePay users who used one of the two digital wallets for online shopping transactions. The researchers examined each service attribute items using the Kano model to identify customer needs, customer satisfaction, and the service attribute quality.

2. Validity and Reliability Test

The construct validity test in this study was conducted for each dimension and measured item. The indicators of each construct item should have a significant value for the construct

being measured. To test the instrument's validity, an exploratory factor analysis (EFA) was conducted using SPSS for Windows version 22. Based on the KMO (Kaiser-Meyer-Olkin) and Bartlett results below, the KMO value was 0.849, and the Bartlett's test significance was 0.000.

Table 2: KMO and Bartlett's Test

KMO and Bartlett's Test			
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.			
			0.849
Bartlett's Test of Sphericity	Approx. Chi-Square	6,878.759	
	Df	1,653	
	Sig.	0.000	

Furthermore, every rotated component matrix value for each item in the construct was measured to determine the item validity. The result showed that not all items passed the

exploratory factor analysis (EFA), and the affective dimension excluded since the items of value were unqualified for further analysis. In the rotated varimax test, not all questionnaire items passed the EFA test; 18 functional questions passed and 11 did not, while 22 dysfunctional questions passed, and 7 did not. Thus, items that failed to pass the EFA test were removed, resulting in the elimination of the affective dimension from the EFA test. Based on the EFA result, the confirmatory factor analysis (CFA) was conducted as the questionnaire items were adapted from the study by Martin et al., (2015). The CFA test results are shown in the Table 3 below.

After the discriminant test, the cross-loading factor that reached a value of 0.5 consisted of 21 items out of the initial 23 items. Referring to Hair et al., (2014), the items that did not reach the expected loading factor score were deleted.

Table 3: CFA Test Result for Each Dimension

			Estimate
Ease of Use_Navigation	<---	Ease of Use	0.614
Ease of Use_Flexibility (all features)	<---	Ease of Use	0.841
Ease of Use_Flexibility of ShopeePay/Ovo	<---	Ease of Use	0.812
Aesthetic_Display Quality	<---	Aesthetic	0.642
Aesthetic_Display Representation Toward Brand	<---	Aesthetic	0.626
Aesthetic_Display Importance	<---	Aesthetic	0.763
Aesthetic_Advertisement Frequency	<---	Aesthetic	0.675
Connectedness_Connection with the Other Users	<---	Connectedness	0.819
Connectedness_Product Recommendation Features	<---	Connectedness	0.695
Connectedness_Review Features	<---	Connectedness	0.566
Perceived Control_Control over The Use of Personal Information	<---	Perceived Control	0.692
Perceived Control_Information Features	<---	Perceived Control	0.736
Perceived Control_Control over Information Features	<---	Perceived Control	0.796
Perceived Control_Control Over Online Shopping Transaction	<---	Perceived Control	0.725
Perceived Risk_User Trust to Overall Features	<---	Perceived Risk	0.563
Perceived Risk_Personal Information Safety	<---	Perceived Risk	0.85
Perceived Risk_Transaction Safety	<---	Perceived Risk	0.745
Perceived Risk_User Trust toward Transaction	<---	Perceived Risk	0.891
Trust_Transaction Trust	<---	Trust	0.693
Trust_ShopeePay/OVO Reliability	<---	Trust	0.694

Table 4: CFA Test Result for Each Dimension

	CR	AVE	MSV	MaxR(H)	Ease of Use	Aesthetics	Perceived Benefit	Connectedness	Customization	Perceived Control	Affective	Perceived Risk	Trust	Satisfaction
Ease of use	0.700	0.543	0.326	0.752	0.737									
Aesthetics	0.700	0.536	0.329	0.725	0.571***	0.732								
Perceived Benefit	0.653	0.487	0.412	0.671	0.570***	0.574***	0.698							
Connectedness	0.775	0.536	0.604	0.792	0.286**	0.399***	0.480***	0.732						
Customization	0.568	0.399	0.619	0.581	0.416***	0.514***	0.637***	0.777***	0.632					
Perceived Control	0.797	0.567	0.601	0.801	0.391***	0.475***	0.540***	0.536***	0.775***	0.753				
Perceived Risk	0.700	0.519	0.657	0.754	0.189*	0.347***	0.235**	0.085	0.264**	0.216**	0.119	0.721		
Trust	0.823	0.61	0.657	0.858	0.267**	0.385***	0.278***	0.173*	0.284**	0.347***	0.121	0.811***	0.781	
Satisfaction	0.548	0.381	0.619	0.569	0.327**	0.534***	0.642***	0.681***	0.787***	0.629***	0.539	0.103	0.229*	0.617

To pass this test, the AVE value must exceed 0.5 (Hair et al., 2014). In this study, the AVE values for six dimensions exceeded 0.5, namely: ease of use (0.543), aesthetics (0.536), connectedness (0.536), perceived control (0.567), perceived risk (0.519), and trust (0.610). Therefore, the items of those dimensions passed to the next test. However, the AVE value for three dimensions was less than 0.5, meaning that they failed the validity test. The three dimensions were: perceived benefit (0.487), customization (0.399), and satisfaction (0.381). In testing the item reliability, the Cronbach's alpha value should be at least 0.7. Based on the test, all six dimensions had a value of 0.7, signifying that they were qualified and passed for further analysis. The listed Cronbach's alpha values for the six dimensions are ease of use (0.700), aesthetics (0.700), connectedness (0.775), perceived control (0.797), perceived risk (0.700), and trust (0.823).

3. Analysis of Questionnaire Result

3.1. Profile of Respondents

The questionnaires were sent to 310 users of OVO and ShopeePay who used only **one over 2** digital wallets for online shopping transactions; 290 effective responses received were qualified for further analysis. The statistical results showed that most respondents were female, with a response rate of 76.2%, while 23.8% were males. Most respondents were in the age range of 15 to 20 years old (18.6%), 21 to 25 years old (50.4%), and over 25 years old (31%). Moreover, most respondents were college students (49.3%), or entrepreneurs (11%), and less than 10% had other occupations. The frequency of respondents using OVO and ShopeePay for online shopping transactions over the last three

months (from March to May 2020) was 1 to 3 times (34.1%), 4 to 6 times (24.9%), 7 to 9 times (13.8%); 13.8% of respondents used them either 10 to 12 times or 13 to 15 times; 13.4% used them more than 15 times.

3.2. Dimensions of Customer Needs

Elmar Sauerwein, Franz Bailom, and Kurt Matzler, (1996) suggested that on product development, business organizations should prioritize the order following Kano model ordered-classification: must be, one dimensional, attractive, and indifferent. In this study, the items dimension in the "must be" category should be prioritized as their presence is crucial. Fulfilling the "one dimensional and attractive categories" will generate a greater customer satisfaction value. Accordingly, all ShopeePay's features are mostly in the "one dimensional" (ten items) and "must be" (seven items) categories, while all OVO's features are mostly in the "must-be" (nine items) and "one-dimensional" (six items) categories. The category of each ShopeePay and OVO digital wallet's items dimension, according to the Kano Evaluation Table, are shown in Tables 5 and 6 below.

3.3. Customer Satisfaction Coefficients

The customer satisfaction coefficients for each item dimension are plotted in Figure 3 (ShopeePay) and Figure 4 (OVO), respectively. Each customer satisfaction diagram is divided into four quadrants according to their categories: "must be," "one dimensional," "attractive" and "indifferent." The following explains ShopeePay and OVO's customer satisfaction coefficient map.

Table 5: Category of Each Items Dimensions for ShopeePay

Dimensions	Items	A	M	R	O	Q	I	A+O+M	I+R+Q	Category
Ease of Use	Navigation	49	12	0	53	0	31	114	31	One Dimensional
	Flexibility (all features)	53	19	0	53	0	20	125	20	One Dimensional
	Flexibility of ShopeePay	46	17	0	61	1	20	124	21	One Dimensional
Aesthetics	Display Quality	29	28	0	32	0	56	89	56	One Dimensional
	Display Resepresentation Toward Brand	33	25	0	21	0	66	79	66	Attractive
	Display Importance	31	30	0	33	0	51	94	51	One Dimensional
	Advertisement Frequency	26	31	0	51	0	37	108	37	One Dimensional
Connectedness	Connection with the other users	27	31	0	24	0	63	82	63	Must Be
	Product Recommendation									
	Features	26	41	0	27	0	51	94	51	Must Be
Perceived Control	Review Features	32	33	0	42	0	38	107	38	One Dimensional
	Control over The Use of Personal Information	22	36	0	35	2	50	93	52	Must Be
	Information Features	29	29	0	35	1	51	93	52	One Dimensional
	Control over Information Features	31	24	0	30	1	59	85	60	Attractive
	Control Over Online Shopping Transactions	27	39	0	40	0	39	106	39	One Dimensional
Perceived Risk	User Trust to Overall Features	31	22	0	29	0	63	82	63	Attractive
	Personal Information Safety	15	39	0	31	1	59	85	60	Must Be
	Transaction Safety	11	39	0	25	1	69	75	70	Must Be
	User Trust Towards Transaction	17	37	0	28	0	63	82	63	Must Be
	Transaction Trust	22	34	0	38	0	51	94	51	Must Be
Trust	ShopeePay Reliability	28	31	0	41	0	45	100	45	One Dimensional

**Notes: A: Attractive; O: One Dimensional; M: Must Be; I: Indifferent, R: Reverse; Q: Questionable.

The scores being measured classified each feature into a Kano Classification Category and determined the customer satisfaction coefficient

Table 6: Category of Each Items Dimensions for OVO

Dimensions	Items	A	M	R	O	Q	I	A+O+M	I+R+Q	Category
Ease of Use	Navigation	50	18	0	46	0	31	114	31	Attractive
	Flexibility (all features)	53	15	0	47	0	30	115	30	Attractive
	Flexibility of OVO	34	27	0	43	0	41	104	41	One Dimensional
Aesthetics	Display Quality	25	29	0	23	0	68	77	68	Must Be
	Display Representation Toward Brand	35	31	0	26	0	53	92	53	Attractive
	Display Importance	28	25	1	28	1	62	81	64	One Dimensional
	Advertisement Frequency	25	39	0	36	0	45	100	45	Must Be
Connectedness	Connection with the other users	22	42	1	22	0	58	86	59	Must Be
	Product Recommendation Features	33	28	0	26	0	58	87	58	Attractive
	Review Features	31	39	0	24	0	51	94	51	Must Be
Perceived Control	Control over The Use of Personal Information	33	28	0	40	0	44	101	44	One Dimensional
	Information Features	28	25	0	38	0	54	91	54	One Dimensional
	Control over Information Features	29	37	0	34	0	45	100	45	Must Be
	Control Over Online Shopping Transactions	25	26	0	35	1	58	86	59	One Dimensional
Perceived Risk	User Trust to Overall Features	30	31	1	21	1	51	82	53	Must Be
	Personal Information Safety	25	31	1	28	2	58	84	61	Must Be
	Transaction Safety	18	38	0	26	3	60	82	63	Must Be
	User Trust Towards Transaction	27	30	0	27	1	60	84	61	Must Be
Trust	Transaction Trust	53	25	0	37	0	30	115	30	One Dimensional
	OVO Reliability	35	24	0	27	0	59	86	59	Attractive

**Notes: A: Attractive; O: One Dimensional; M: Must Be; I: Indifferent, R: Reverse; Q: Questionable.

The scores being measured classified each feature into a Kano Classification Category and determined the customer satisfaction coefficient

3.3.1. Customer Satisfaction Map for ShopeePay Features

Based on the satisfaction map below, all ShopeePay “ease-of-use” features in the “attractive” quadrant suggest that the item satisfaction in this dimension exceeds customer expectations and needs. One item from each of the aesthetics and connectedness dimensions (advertisement frequency and review features) is placed in the “one dimensional” quadrant, meaning that both features have the highest

customer satisfaction, with a higher dissatisfaction coefficient value. Therefore, ShopeePay is expected to reduce this dissatisfaction value by improving these two features. Two items from perceived control (control over the use of personal information and control over online shopping transactions) and all items from the trust dimension in the “must be” quadrant denote that all items in this diagram have lower satisfaction and a high dissatisfaction value. All items in the “indifferent” quadrant are expected

to increase the lowest value of customer satisfaction in this quadrant. Therefore, ShopeePay should focus on all items in the “one dimensional”, “must be”, and “indifferent” quadrants. Furthermore, analyzing the dissatisfaction source and improving the system, or the items’ features, based on the analysis results are expected to reduce the customer dissatisfaction value. All items in the “indifferent” quadrant are expected to be prioritized in developing and improving the system features to achieve higher level of satisfaction, continuing with the items in the “must-be”, “one dimensional”, and “attractive” quadrants.

3.3.2. Customer Satisfaction Map for OVO Features

Based on the satisfaction map below, several features are placed in the “attractive,” “must-be,” and “indifferent” quadrants. One item of perceived control (control over the use of

personal information) and all items from the ease-of-use dimension in the “attractive” quadrant denote the success of exceeding customer needs and expectations for these four items. Therefore, the company is expected to maintain higher value of customer satisfaction and decrease the customer dissatisfaction value. Whereas, one item in the aesthetic dimension (advertisement frequency) is placed in the “must be” quadrant with lower customer satisfaction and higher dissatisfaction value; the other items placed in the “indifferent” quadrant with the lowest satisfaction and lower dissatisfaction value. With these results, OVO is expected to analyze the causes of customer dissatisfaction and improve all items in the “indifferent” and “must be” quadrants, prioritizing the “indifferent” quadrant for system development and improvement, continuing with the “must be” and, finally, the “attractive” quadrant.

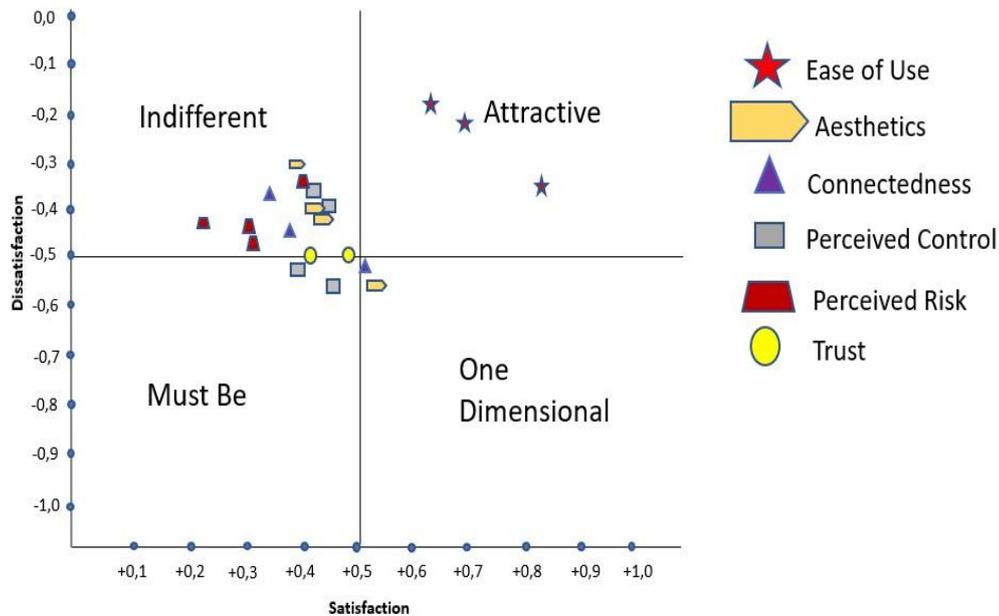


Figure 3: Customer Satisfaction Mapping for ShopeePay Features

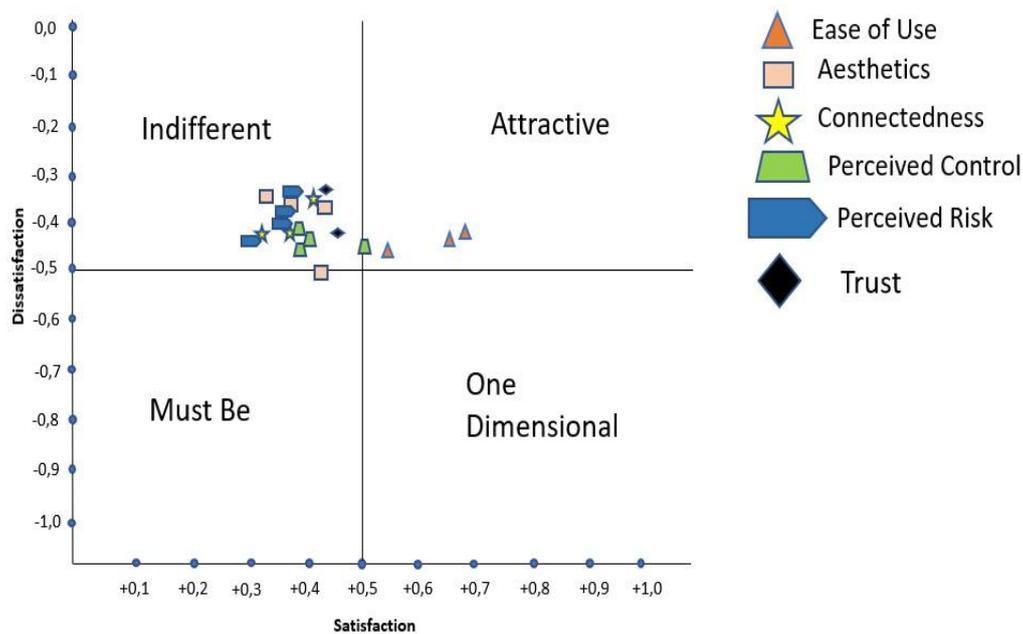


Figure 4: Customer Satisfaction Mapping for OVO features

CONCLUSION AND SUGGESTIONS

The Kano model is a theoretical model connecting the categories fulfilled by products or services with customer satisfaction. It identifies three categories influencing customer satisfaction, namely: “must be,” “one dimensional” and “attractive.” Kano's customer satisfaction model elaborates how prioritizing operational objectives generates lasting improvements in customer service delivery (Saeidipour, Vatandost, Akbari, & Branch, 2012). The Kano model classifies products and services by understanding desire that affects customer satisfaction (Xu et al., 2009). Kano et al., (1984) proposed a model that helps researchers distinguish between three types of product/service requirements, thereby differently affected customer satisfaction when they are met.

Based on the satisfaction map results (OVO and ShopeePay), many items were placed in the “indifferent” quadrant for not meeting customer expectations and needs due to lower customer satisfaction coefficient. Therefore, both companies should prioritize the items development in the “indifferent” quadrant first. Afterwards,

they should develop the features in the other quadrants (“must be,” “one dimensional,” and “attractive” quadrants, respectively) to increase the customer satisfaction coefficient. The results between OVO and ShopeePay differ because based on previous literature by Hussain et al., (2015); and Zhu & Tsai, (2010), every software product or service varies in design, cost, and method of feature delivery, generating different customer satisfaction.

Based on the report of (Husnaini, 2020; Pink, 2020), the number of Indonesians fulfilling their needs through e-commerce increased rapidly while this study was conducted. Bank Indonesia stated that e-commerce transaction from March until May 2020 accounted for 59.06 billion Rupiah in spending. The shifting behavior of Indonesian society from offline platforms to online shopping was mainly caused by the PSBB implementation in big cities in Indonesia, preventing people from leaving their homes. Furthermore, several places, like malls or shopping centers were closed, forcing people to stay home and shop using various e-commerce applications in their phones; this is accountable

for the increasing amount of online shopping transactions by up to 400% between March and May 2020.

Since Bank Indonesia encouraged using digital wallets during the pandemic to prevent the COVID-19 transmission, the number of digital wallet users grew markedly. Research conducted by MarkPlus Inc. showed the rising use of digital wallets by Indonesians since the COVID-19 pandemic attacked Indonesia. MarkPlus Inc's research also suggested that the shift of Indonesian society towards digital wallets will become the normal behavior in the future. Research by McKinsey & Company, (2020) showed that the market for digital wallets in Indonesia emerged and has evolved since COVID-19 hit Indonesia. Das et al., and Mckinsey, (2016) stated that the shifting payments from cash to digital wallets occurred during COVID-19. MarkPlus Inc's research also noted that most people used digital wallets as the payment method for e-commerce transactions during the pandemic.

Based on these facts and the results of our study, OVO and ShopeePay must improve their digital wallets features to achieve higher customer satisfaction based on the "indifferent", "must be", "one dimensional", and "attractive" category, respectively. Dissatisfaction might come from a digital wallet that is incompatible with their systems, or the systems could not fulfill the customer needs using a digital wallet for e-commerce transaction. Research by McKinsey and Finance Derivative Magazine showed that the market for digital wallets still growing and evolving. The overwhelming number of customers using both services while their system capacity still needs improvements could be why both platforms have lower customer satisfaction than the others. Moreover, customers unfamiliar with digital wallets might experience difficulties in operating the

platforms' various features. According to McKinsey and Finance Derivative Magazine, digital wallets in Indonesia still require service improvement since users are expected to keep increasing, becoming more permanent behavior in the future. Conclusively, the COVID-19 pandemic decreased customer satisfaction due to several factors: companies' unpreparedness for the system, several new customers of digital wallets services are less adaptive to the features, and the digital wallets' features in Indonesia still require service improvement.

This study contributes theoretically and practically. The theoretical contribution provides a comprehension of how a crisis, such as COVID-19, has affected customer behavior as not everyone perceives situations or their negative effects similarly (Amalia et al., 2012; Mehta et al., 2020 and Ang et al., 2001). One effect on customer satisfaction will impact the retention and use of certain products and services. Customers, as the drivers of competitiveness, growth, and economic integration, have transformed their behavior mid-crisis. The Kano model helps institutions categorize their service attributes into different quality elements (Chen, Hsu, & Lee, 2020). Mehta et al., (2020), suggested the urgency to study the correlation of customer behavior with customer needs during COVID-19. This study will contribute to close the gap that Mehta et al., (2020) pinpointed in previous literature regarding the customer behavior of digital wallet users. This study contributes to the understanding of what customer needs and wants, in the context of online shopping and digital wallets, which has been overlooked by prior studies (Ingaldi and Ulewicz, 2019; Kodó and Hahn, 2017). Second, practical contribution provides insights for digital wallet companies to improve their focus-worthy features. Kano model is one of the models proposed to solve manufacturers and

software companies' problems in designing and developing products or services that meet the customer requirements (Singh et al., 2020). With the Kano model, companies not only fulfill their customer needs but also innovate their service content (Chen et al., 2020). Kahandawa & Wijayanayake (2014) revealed that customer satisfaction is influenced by usability, ease of use, etc., which are factors that must be corrected by the financial institutions, though they also lack in comprehending the customers' actual wants from their services. Moreover, usability, ease of use, relative advantage, perceptions of risk and the user's lifestyle, and current customer needs influence customer satisfaction in mobile banking or digital wallet services (Kahandawa & Wijayanayake (2014); the positive relationship highlights the factors that financial institutions should focus on to improve their mobile banking or digital wallets services.

Several limitations should be considered in future studies, namely:

1. The sample size used for the pilot and main study were small due to the limited research time. Future studies are suggested to utilize a greater sample size than the one used in this study to broaden the results.
2. The research subject was to analyze and identify the users' needs and expectations for online shopping transactions using OVO and ShopeePay as payment methods. Therefore, future studies are encouraged to analyze other types of transactions (such as billing transactions), considering the users' various needs and expectations for each type of transaction.
3. The authors used a customer experience approach to develop and adapt their questionnaire. Therefore, future studies could implement another approach (for example a customer journey approach) in developing and adapting the Kano model's questionnaire.

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