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Research Article

Enhancing User Satisfaction in Indonesia's e-wallet Market: A Comprehensive Analysis of Factors and Priorities

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Research on user satisfaction is crucial because it is the key to digital business success, including e-wallet in Indonesia which is experiencing very rapid growth. This study is aimed at determining the gap between e-wallet perception and user expectations, evaluating the level of user satisfaction among e-wallet, and determining the priority of improvement of the factors that affect e-wallet user satisfaction. Data processing is divided into four stages: Kano model, processing the comparison between user satisfaction data based on the gap in the value of perceptions and user expectations, processing of satisfaction gaps between e-wallet applications, and processing for multinomial logistic regression (MLR). To measure user satisfaction with a service, the concept of SERVQUAL, which consists of tangibles, reliability, responsiveness, assurance, and empathy, was used. Data were collected using online questionnaire distributed in the areas of Jakarta, Bogor, Depok, Tangerang, and Bekasi. The results of this study show that based on a comparison between users' perceptions and expectations, the satisfaction gap value is negative. This shows that e-wallet users are not satisfied. The comparison of satisfaction gaps between e-wallet shows significant differences for security, efficiency, reliability, application display design, and economic benefit factors, whereas no significant difference is found for the customer service factor. This study provides the priority of improvement for each e-wallet provider. The novelty of this research is the priority for improvement that is derived from a combination of expectation and perception mapping, Kano's model, and MLR. The findings could be used to increase the user satisfaction that can lead to the success of an e-wallet application.

1. Introduction

The development of smartphones, along with the development of reliable Internet networks, operating systems, and user interfaces, has driven the transformation of various digital platforms such as digital payment services [1, 2]. Digital payment services are predicted to reach 1,045.5 billion USD, with the highest growth seen in Asia, Australia, and South America [3]. Asia Pacific (APAC), where noncash transactions spilled 243.6 billion in 2019, leads the global noncash transaction space with a growth rate of about 25% [3]. Digital payment transactions can be done using e-wallet. e-wallet is an online payment application that can be accessed using a smartphone device. Currently, 46% of the 1.8 billion people in Asia Pacific who use the Internet regularly use an e-wallet [4]. In the area that is heavily dependent on cash, the idea of a cashless society has never been feasible. The transition to digital payments lowers operating expenses for small and medium enterprises (SMEs) and boosts the potential and efficiency of regional economies.

Indonesia is one of the fastest-growing e-wallet markets in the world. The e-wallet scenario in Indonesia has been

rapidly evolving in recent years, driven by the country's large population, high smartphone penetration, and a growing middle class. As a result, e-wallets have become increasingly popular in Indonesia as they offer a more secure and convenient way to make payments without carrying cash. Today, e-wallets are used for many transactions in Indonesia, including online shopping, bill payments, transportation, and even small merchants. GoPay, OVO, DANA, ShopeePay, and LinkAja are the most popular e-wallets in Indonesia, each offering unique features such as cashback rewards, discount vouchers, and loyalty programs to attract users. In 2017-2019, GoPay still dominated the e-wallet market in Indonesia, followed by OVO and DANA, while ShopeePay and LinkAja are still at the bottom of the rankings. Within two years, ShopeePay increased to number three in the 2019-2020 period, but on the other hand, DANA and LinkAja slumped to the bottom of e-wallet usage. ShopeePay's strategy to penetrate the market is booming, related to promo programs attracting new users or other e-wallet users to switch. The Indonesian government has also supported the e-wallet market, implementing policies such as tax incentives for merchants who accept digital payments. Despite the rapid growth of the e-wallet market in Indonesia, challenges still need to be addressed, including increasing user awareness, improving interoperability among e-wallet providers, and addressing cybersecurity risks. Nonetheless, the future looks bright for the e-wallet market in Indonesia as it continues to transform how people make payments in the country. Figure 1 describes the complete ranking of active users of e-wallets in Indonesia.

Thirty-nine e-wallet service providers, such as GoPay, OVO, DANA, and LinkAja, with official licenses from Bank Indonesia, are currently operating in Indonesia in 2020. With 10 million active users, GoPay has dominated the e-wallet market since 2017, with T-Cash (now changed to LinkAja) taking the fourth place. Based on data from the iPrice Group in collaboration with the App Annie Intelligence in the second quarter of 2019, GoPay has the most active users in Indonesia [5]. In the second quarter of 2021, GoPay was still the leader, followed by OVO and DANA. However, ShopeePay was able to shift DANA's position. This shows the existence of competition between e-wallet service providers to get loyal users.

Meanwhile, based on a survey ran by Populix on May 2022 with 1000 responded, out of 538 respondents that use e-wallet apps, GoPay is the most popular with 88%, followed by DANA with 83% and then followed by OVO, ShopeePay, LinkAja, I.saku, OCTO Mobile, Doku, Sakuku, and finally JakOne Mobile, respectively. This supports that GoPay is still the most used app based on Figure 1, in which it has the most active users in 2021, then DANA is gaining to 2nd place while OVO and ShopeePay were going down to 3rd and 4th place, respectively, and LinkAja stays at 5th place. Figure 2 shows the result of the survey from Populix.

Another problem faced by the e-wallet application is the churn rate. Churn rate describes a user or consumer who decides to stop using a product or service and or move to a competitor's product or service. Based on the survey conducted, DANA obtained the largest estimated churn rate,

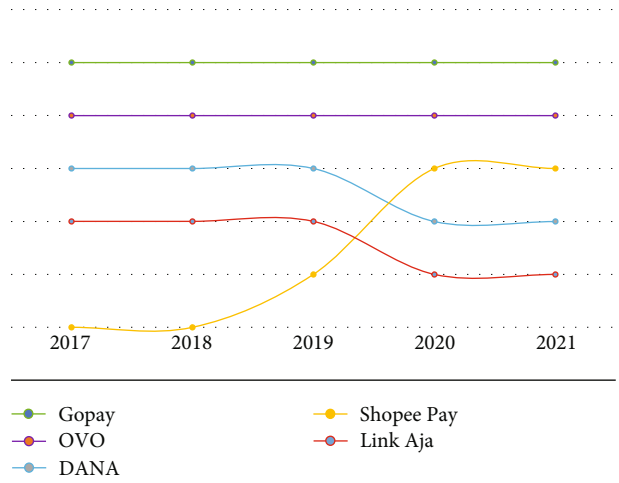


Figure 1: Ranking of active users of e-wallet in Indonesian competition.

while OVO projected the smallest rate. Figure 3 shows the churn level based on the survey. Users who experience churn, in general, will move to competitor products. One factor that influences churn is user satisfaction [6]. A satisfied user will continue using a product or service; a dissatisfied user, on the other hand, will most likely move to a competitor. Hence, user satisfaction is crucial in maintaining existing users.

Various studies have discussed the acceptance of e-wallet in the community. Two theories are often used: the unified theory of acceptance and use of the technology (UTAUT) and the technology acceptance model (TAM). TAM uses perceived ease of use and perceived usefulness as factors to identify behavioural intention in the use of technology [7]. On the other hand, UTAUT is a modification of TAM that determines the intention to use technology by taking into account four main factors, namely, effort expectancy, performance expectancy, social influence, and facilitating conditions, as well as several demographic variables as moderating factors [8]. Other factors that influence intention to use a technology include perceived value addition [9], perceived risk [10, 11], attitude [12], innovativeness [13], and user satisfaction [14–16].

Further research in the area of digital payments like e-wallets will always be needed because payment services will continue to transform and grow [17, 18]. The factors that influence the acceptance and intention to use of the service can be built as the competitive edge of a digital payment [19, 20]. One factor in digital payments is intention to use, determined by user satisfaction [1, 15, 21]. Higher user satisfaction would mean higher possibilities of reusing the service [22–24]. User satisfaction is one of the factors driving the sustainability of e-wallets [25] and is important for digital business success [26–28]. To prevent users from switching to competitors, companies must pay attention to factors that affect service satisfaction, especially in aggressive market conditions [22]. Research on user satisfaction with digital payments is crucial [29, 30], as the gap between expectations and user satisfaction is a challenge for the

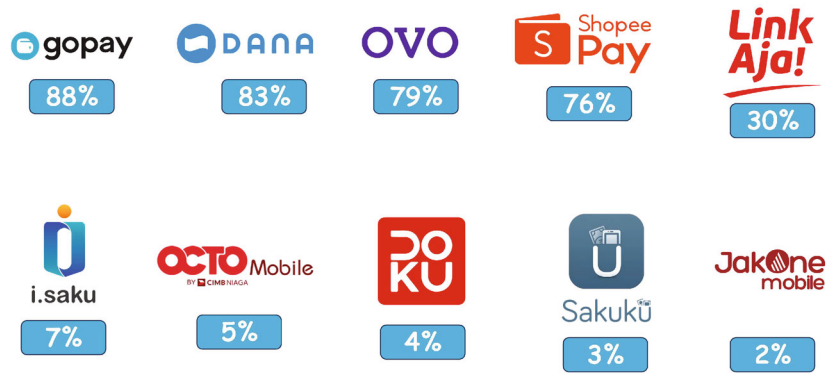


Figure 2: Rank of e-wallet users in 2022.

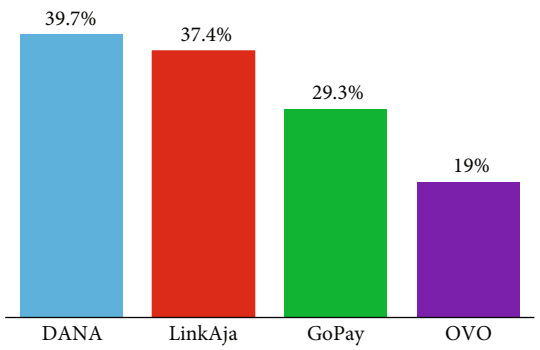


Figure 3: The estimated churn rate for e-wallet users in Indonesia in 2020.

sustainability of e-wallet [25]. This study is aimed at determining the level of satisfaction of e-wallet users based on the gap between expectations and user satisfaction, evaluating the level of user satisfaction among e-wallet service providers, and determining the priority of improvement of the factors that influence the satisfaction of e-wallet users. By examining the level of user satisfaction, companies can evaluate and analyse the importance of a component in the system, improve existing services, and create innovative ideas continuously.

2. Literature Review

Digital commerce today emphasizes the function of convenience and ease of transactions. The most commonly used devices are mobile phones and laptops. Digital payment systems are integral to digital commerce technology [31]. According to Chantzaras et al. [32], there are several main factors in determining success in digital commerce: security, trust, and customer convenience. In addition, Theodosiou et al. [33] also stated in their research that security is an essential factor in getting customer satisfaction in using digital commerce. The era of digital commerce has changed everyday life, especially work efficiency. Previous literature has also identified that work efficiency is one of the factors in getting customer satisfaction in digital commerce [34, 35]. New features in digital commerce must be identified, including how to leverage strengths and minimize risks, so an integrated digital platform must be built to accelerate the trend of digital commerce and improve social trends and work efficiency [31]. Digital commerce relies on Internet and cellular technology services for customer convenience [36]. Therefore, system reliability in customer service is one of the critical factors in improving the quality of the use of digital commerce and digital payment platforms [34]. Improving digital commerce services also depends on customer service and interface design, especially system personalization, which is an inseparable part of improving digital commerce services, especially digital payments [33, 37]. Moreover, another factor that is no less important is economic benefit. Every digital trading and payment system compete to provide personal benefits for its consumers, thus making consumers switch to digital platforms that provide the most personal benefits [25]. Therefore, digital commerce platforms must know the importance of fully understanding consumer desires, which provides economic benefits to consumers, so that digital retailers can increase value, service benefits, and sustainability in running digital commerce businesses [38].

2.1. e-wallet. Significant growth in mobile shopping and e-wallet usage has shifted traditional retail stores to websites and mobile apps. It is necessary for retailers to implement the right digital commerce strategy to face the formidable challenges of building and nurturing customer relationships [39]. Loyal customers are the key to retailers' success in facing an increasingly competitive market in the era of mobile commerce [40]. The rising opportunities and options for shopping through mobile technology have led several studies to learn more about mobile service quality on customer satisfaction focusing on electronic bank payments [41, 42]. The development of the Internet encouraged the formation of digital commerce, leading to the emergence and development of platform-based digital commerce and digital payment models [43]. In addition, other technologies such as social media, cloud technology, big data, and artificial intelligence have also increased the development of digital commerce and digital-based payment systems [44]. Previous studies have explored various methods to understand e-commerce and electronic payment systems research. Du and Li [31] described a knowledge map that can illustrate the research themes

currently being discussed in electronic commerce. [45] identified online reviews, social media, and word of mouth as future e-commerce research trends. In addition, Shiau and Dwivedi [46] conducted a factor analysis on electronic markets, acceptance, and application of application technology related to digital commerce. Digital commerce is a commercial activity built for customer convenience, making the platform easy to use and cost-effective [47].

Financial technology (Fintech) is a technological innovation in financial services and is divided into four categories: financial technology in the payment sector, the lending sector, the wealth management sector, and the insurance sector. The payment industry is the most complex in the financial industry [48]. Overtime, the payment instruments have also changed. Financial technology has provided innovative ways for users hence changing the payment industry. e-wallet is one of the most well-known types of financial technology. It is a financial product and technology service similar to a physical wallet but in digital form. It functions as a virtual wallet, where users have to register themselves and fill in balances to make payments through the application.

An understanding of research trends in digital commerce has been done in previous studies. Some of these studies have focused on specific research themes such as digital commerce [31], consumer loyalty in the digital era [49], and shopping application technology and digital payments [50]. Although some research has studied the various evolutions of digital commerce, there is a lack of a comprehensive knowledge map for academics on the theme of digital payment systems that are part of e-commerce. Therefore, there is a need for research that discusses electronic payment systems, which are currently growing significantly in Indonesia [5].

2.2. User Satisfaction. User satisfaction is how customers see an organisation's product or service based on their experience with it and by comparing what they have heard or seen about other companies' products or services [51]. Satisfaction (dissatisfaction) is a feeling of pleasure (disappointment) that results from comparing the perceived product performance with expectations [52]. If the performance or experience does not match expectations, dissatisfaction occurs. The customer is satisfied if it is in line with or exceeds expectations.

Several methods can be used to measure user satisfaction, one of which is the expectation and disconfirmation theory. It is aimed at measuring customer or user satisfaction by comparing expectations with the actual product or service attributes [53]. Expectations are personal beliefs that are influenced by experience, environmental influences, and brand connotations [54]. Negative confirmation results are generated when product performance is worse than expected, simple confirmation is generated when product performance is in line with user expectations, and positive confirmation is generated when performance is higher than consumers' expectations [54]. Positive confirmation will increase user satisfaction, whereas negative confirmation will reduce user satisfaction. Customer satisfaction is the fulfillment of not only customer expectations but also customer desires. Desire is defined as an attribute or benefit of a product that is considered to provide high value [55]. Consumers will evaluate whether the product achieves desires by assessing the extent to which it provides attributes that produce that state. Overall, product satisfaction is influenced by attributes and information components. The satisfaction attribute relates to the characteristics of a particular product, while information satisfaction refers to customer feelings about the amount and quality of information available when making a purchasing decision [56]. The expectation and disconfirmation theory is simply aimed at comparing brand performance based on the experience consumers have with consumer expectations.

Initially, to measure user satisfaction with a service, the concept of SERVQUAL, which consists of tangibles, reliability, responsiveness, assurance, and empathy, can be used [57]. However, the theory can only be applied to conventional services. It cannot be fully applied in technology-based services [34]. This study measures the level of satisfaction of e-wallet users using factors that have a significant influence on user satisfaction of a technology adopted from previous studies. These factors are security [33, 35], efficiency [34, 35], reliability [33, 35], customer service [33–35], interface design [33, 37], and economic benefit [25].

2.3. Kano Model. The Kano model is a method used to classify the satisfaction level of an attribute or variable. The Kano model analysis describes the level of customer satisfaction to determine the relationship between dissatisfaction and satisfaction with the characteristics of a product attribute. The Kano model is based on the idea that the features or attributes of a product can be plotted using the fulfillment axis and the delight axis. According to the relationship between the various types of quality characteristics and customer satisfaction, the quality characteristics of a product or service are divided into five categories: likes, must, neutral, live with, and dislikes [58].

An evaluation of the Kano model will result in five possible categories of satisfaction shown in Figure 4 [58], namely, must-be, one-dimensional, attractive, indifferent, and reverse. A detailed explanation of these categories is as follows:

(i) Must-be (M): when an attribute is found in a product and functions properly, the user will feel normal. On the other hand, if it is missing or fails to function properly, the user will feel dissatisfied or disappointed

(ii) One-dimensional (O): when an attribute is present in a product and functions properly, the user will be satisfied; if not, the user will feel dissatisfied

(iii) Attractive (A): if an attribute is found in a product and works well, then the user will be satisfied; if not, then the user will not be disappointed

(iv) Indifferent (I): the presence or absence of an attribute will not affect user satisfaction

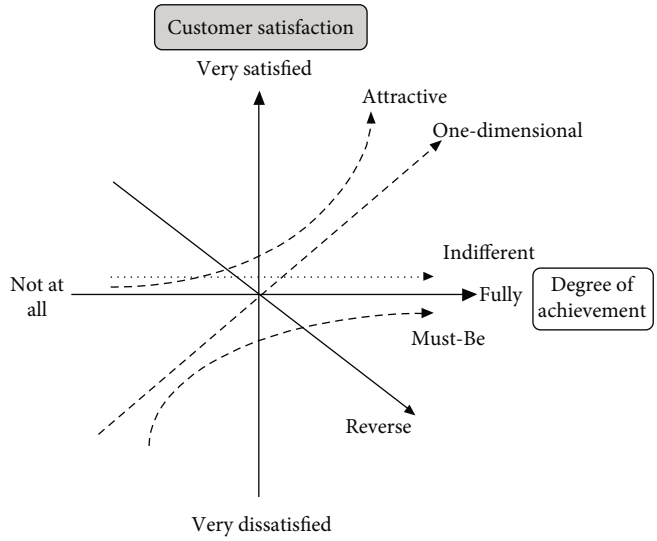
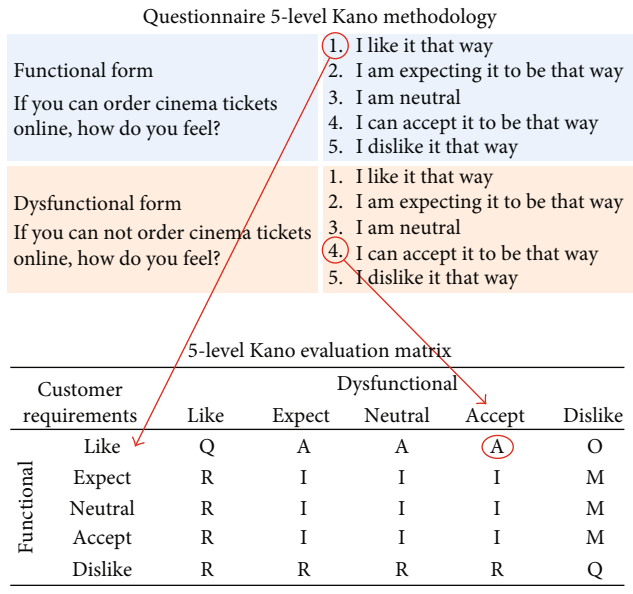


Figure 4: Kano model illustration [58].

(v) Reverse (R): when an attribute is found in a product, it will make the user feel dissatisfied; otherwise, the user will feel satisfied

An illustration of the Kano model evaluation process is shown in Figure 5. When answers in the functional and dysfunctional forms show the value 1, which means "like," and the value 4, which means "accept," respectively, then it is concluded to fall in the attractive (A) category.

2.4. Multinomial Logistic Regression. Based on the analysis of the Kano model, user satisfaction not only has a linear relationship but also an exponential relationship. To build equations that describe the relationship of independent variables to user satisfaction, MLR is used. MLR is a logistic regression used when a dependent variable has a polychotomous or multinomial scale on a nominal or ordinal scale with more than two categories. In MLR calculations, the dependent variable should be in categorical types of data. To fulfill this requirement, respondents' answers on the dependent variable (customer satisfaction) are grouped into categories between satisfied and dissatisfied respondents.



Customer requirements		Dysfunctional: Like	Expect	Neutral	Accept	Dislike
Functional	Like	Q	A	A	A	O
	Expect	R	I	I	I	M
	Neutral	R	I	I	I	M
	Accept	R	I	I	I	M
	Dislike	R	R	R	R	Q

Figure 5: Illustration of Kano model classification [58].

3. Methodology

3.1. Research Design. This research consists of four stages: processing using the Kano model, calculating user satisfaction by calculating user perceptions and user expectations, comparing user satisfaction between e-wallet applications, and processing using MLR. These stages aim to combine the results of priority improvements in the Kano model and MLR as a novelty in this study.

3.2. Sampling Procedure. Data were collected using a questionnaire distributed in social media such as WhatsApp, Line, Telegram, Facebook, and Instagram. The sampling process was carried out in the areas of Jakarta, Bogor, Depok, Tangerang, and Bekasi. Non-e-wallet users will not be able to complete the questionnaires because, at the beginning, respondents are required to choose which e-wallet they own and use. Therefore, only e-wallet users' data are used in this work.

3.3. Instruments. The literature was studied in advance to compile questions for the questionnaire and determine the factors in this study. Seven factors were obtained with a total of 26 questions. The research questionnaire can be seen in Table 1. All questions were adopted from each reference. Safety, efficiency, reliability, customer service, display design, and economic benefits are independent factors. These factors, based on previous research literature, significantly influence a technology's user satisfaction. The user satisfaction factor is the dependent factor that will be used to build the regression

Table 1: Research questionnaire.

No.	Factor		Questions
1.	Security [33, 35]	Sec1	(1) I feel safe doing transactions with this application
		Sec2	(2) I feel confidential that my data is protected in this application
		Sec3	(3) I believe this application will not misuse my personal information
		Sec4	(4) I can trust this application
		Sec5	(5) The application provides transaction reports that I need
2.	Efficiency [34, 35],	Eff1	(6) This application can be accessed quickly
		Eff2	(7) The application is easy to use/operate
		Eff3	(8) Applications can be used in various places/merchants
		Eff4	(9) This application allows making the payment process quickly
		Eff5	(10) This application can save time in the payment process
3.	Reliability [33, 35]	Rel1	(11) The transaction with this application is error-free
		Rel2	(12) The application has never crashed or damaged
		Rel3	(13) The application functions properly when used
		Rel4	(14) This payment application is reliable
4.	Customer service [33–35]	Cs1	(15) The application provides telephone numbers, chat, or email that can be contacted promptly
		Cs2	(16) Customer service personnel are always sympathetic and willing to help consumers
		Cs3	(17) When I contact customer service, customer service has sufficient knowledge and I get the right explanation
		Cs4	(18) When I contact customer service, my complaint is handled appropriately
5.	Interface design [33, 37]	Int1	(19) The application display design looks visually appealing
		Int2	(20) The application display looks clear and neat
		Int3	(21) This application has a user-friendly layout
6.	Economic benefit [25]	Eco1	(22) The application provides cashback or reward points
		Eco2	(23) Top up from ATMs or Internet banking is free of administrative fees
		Eco3	(24) The application can process the transfer or withdrawal of the balance to the bank account number
		Eco4	(25) The application provides information to you about ongoing promos
7.	Overall satisfaction	Sat	(26) Overall, I am satisfied with this payment application

model. The Kano model questionnaire uses only the six factors of the independent variable. The instrument was first tested with limited participants to check whether the participants can appropriately understand the instrument.

Two types of questions measure the level of satisfaction of e-wallet users: user expectation questions and user perception questions of e-wallet (GoPay, OVO, DANA, and LinkAja). On the other hand, the Kano model questionnaire has two categories, namely, the function aspect question and the dysfunction aspect question. The user satisfaction questionnaire uses the 5-level Likert scale, with 1 very dissatisfied and 5 very satisfied. Ordinal-scale data describes the values that occur in some order of rank. An example of an ordinal scale is a Likert-type scale. This scale asks the respondent to make a judgment using a scale of three, five, or seven items. The range of such a scale might use 1 to represent strongly disagree while 5 might represent strongly agree. This type of scale can be considered an ordinal measurement since any two respondents will vary in their interpretation of the scale values [59]. The use of a Likert scale will produce a higher reliability coefficient when compared with other methods. The Kano model questionnaire uses a 5-rating scale: 1 for "likes," 2 for "must-be," 3 for "neutral," 4 for "tolerate," and 5 for "dislike."

3.4. Data Collection. Data were processed after being collected. Data processing is divided into four stages: processing for the Kano model, processing the comparison between user satisfaction data based on the gap in the value of perceptions and user expectations, processing of satisfaction gaps between e-wallet applications, and processing for MLR. The first stage is the Kano model data processing. This stage's result is a mapping of the nature of the factors to user satisfaction and improvement priorities. The second stage is comparing the significance of the difference between perceived value and expectations which was carried out using the Wilcoxon signed-rank test method. This method will indicate whether there is a significant difference between the perceived value and the expected value of e-wallet users. The Wilcoxon signed-rank test was chosen because it is a nonparametric statistical procedure for comparing two paired or related samples. The parametric equivalent to these tests goes by names

Table 2: Respondent's profile.

No.	Classifications		GoPay	OVO	DANA	LinkAja
1	Gender	Male	230	177	199	200
		Female	481	423	378	215
2	Region	Jakarta	381	327	283	244
		Bogor	58	49	87	30
		Depok	76	66	65	46
		Tangerang	95	80	57	50
		Bekasi	101	78	85	45
3	Age	<20 y.o	217	198	139	25
		20–30 y.o	462	380	406	352
		30–40 y.o	26	18	25	33
		>40 y.o	6	4	7	5
4	Expense	< Rp. 100.000,-	211	189	164	64
		Rp. 100.000,- to Rp. 500.000,-	334	279	293	205
		Rp. 500.000,- to Rp. 1.000.000,-	109	91	81	103
		Rp. 1.000.000,- to Rp. 1.500.000,-	34	25	14	21
		> Rp. 1.500.000,-	23	16	25	22

such as *t*-test for dependent samples [59]. The third data processing stage is carried out using the Kruskal-Wallis test method and the Mann–Whitney test. The Kruskal-Wallis *H*-test is a nonparametric statistical procedure for comparing more than two samples that are independent or not related [59], while the Mann–Whitney *U*-test is a nonparametric statistical procedure for comparing two samples that are independent, or not related [59]. Results from both tests will show the relative best ranking among the compared e-wallets. The fourth data processing stage, the MLR, will show priority improvements based on the magnitude of the coefficient for each factor and its effect on user satisfaction.

4. Results and Discussion

4.1. User Perceptions and User Expectations. To evaluate user perceptions and expectations, this study collected 2,303 data consisting of 711 data for GoPay, 600 for OVO, 577 for DANA, and 415 for LinkAja. Table 2 shows the detailed profile of the study sample.

Table 3 shows data on user satisfaction gaps based on the difference between user expectations and perceptions and the significance of the difference test for GoPay. The significance test of the difference between perception and expectations is done by the Wilcoxon signed-rank test. A value below 0.05 is considered significant and showed significant differences in the value of perception and expectations. The highest satisfaction gap for GoPay is the economic benefit factor with a gap value of −0.68, whereas the lowest satisfaction gap is the interface design factor with a gap value of −0.23.

Table 4 shows data on user satisfaction gaps for the OVO. The Wilcoxon signed-rank test was used to find results, with significance value below 0.05 showing differences in the value of perception and expectations. The value of the gap marked negative indicates that the user's perception is smaller than their expectations. In the OVO, the highest satisfaction gap is in the reliability factor with a gap value of −0.51, whereas the lowest satisfaction gap is in the efficiency factor with a gap value of −0.30.

Data on user satisfaction gaps for DANA are displayed in Table 5. The significance test is done using the Wilcoxon signed-rank test, with a value below 0.05 showing significant differences. DANA obtained negative gaps, similar to results from GoPay and OVO. The highest satisfaction gap is recorded in the reliability factor with a gap value of −0.46; the lowest satisfaction gaps are found in the security factor and interfaces design factor with a gap value of −0.27.

Table 6 shows data on user satisfaction gaps for the LinkAja. The Wilcoxon signed-rank test is used to determine the difference between perception and expectations, and indeed, there is a significant difference. Results in the LinkAja show that all gaps are negative. Compared with GoPay, OVO, and DANA, LinkAja's satisfaction gap is known to be relatively greater. The highest satisfaction gap is in the reliability factor with a gap value of −0.64, whereas the lowest satisfaction gap is in the security factor with a gap value of −0.36.

4.2. The Satisfaction Gap Comparison between e-wallet Applications. The second objective of this study is to compare the satisfaction gap between e-wallet applications. The comparison method uses the Kruskal-Wallis test to determine the significance of the difference. Values below 0.05 indicate a significant difference. Based on the Kruskal–Wallis test, the satisfaction gap value for the customer service factor is not significant because the Asymp. Sig. score is 0.053, which is above the level of significance. On the other hand, significant differences between e-wallet applications were found for the other factors (security, efficiency, reliability, interface design, and

Table 3: Score and gaps in the expectation and perception of GoPay.

No.	Factor	Expectations		Perceptions		Gap (P-E)	*P* value
		Mean	SD	Mean	SD		
1	Security	4.29	0.67	3.96	0.70	−0.33	0.00
	Sec1	4.40	0.72	4.10	0.80	−0.29	0.00
	Sec2	4.24	0.83	3.83	0.91	−0.41	0.00
	Sec3	4.26	0.82	3.88	0.90	−0.38	0.00
	Sec4	4.26	0.77	3.93	0.82	−0.33	0.00
	Sec5	4.28	0.77	4.03	0.84	−0.25	0.00
2	Efficiency	4.45	0.64	4.18	0.47	−0.27	0.00
	Eff1	4.42	0.72	4.16	0.83	−0.26	0.00
	Eff2	4.48	0.72	4.34	0.75	−0.14	0.00
	Eff3	4.43	0.75	3.96	0.89	−0.47	0.00
	Eff4	4.45	0.69	4.24	0.77	−0.22	0.00
	Eff5	4.46	0.70	4.22	0.80	−0.23	0.00
3	Reliability	4.27	0.71	3.78	0.72	−0.49	0.00
	Rel1	4.26	0.81	3.64	0.88	−0.63	0.00
	Rel2	4.16	0.87	3.51	0.93	−0.65	0.00
	Rel3	4.33	0.75	3.96	0.80	−0.37	0.00
	Rel4	4.34	0.76	4.01	0.83	−0.34	0.00
4	Customer service	4.20	0.78	3.71	0.79	−0.50	0.00
	Cs1	4.22	0.85	3.75	0.94	−0.46	0.00
	Cs2	4.21	0.84	3.71	0.90	−0.50	0.00
	Cs3	4.20	0.83	3.72	0.87	−0.47	0.00
	Cs4	4.18	0.85	3.63	0.92	−0.54	0.00
5	Interface design	4.29	0.72	4.06	0.72	−0.23	0.00
	Int1	4.26	0.78	3.99	0.81	−0.27	0.00
	Int2	4.31	0.75	4.09	0.80	−0.21	0.00
	Int3	4.31	0.77	4.11	0.79	−0.20	0.00
6	Economic benefit	4.27	0.73	3.59	0.77	−0.68	0.00
	Eco1	4.38	0.79	3.86	0.98	−0.52	0.00
	Eco2	4.20	1.01	3.05	1.21	−1.16	0.00
	Eco3	4.15	0.92	3.47	1.05	−0.68	0.00
	Eco4	4.34	0.76	3.97	0.88	−0.36	0.00
7	Satisfaction	4.36	0.73	4.04	0.75	−0.33	0.00

economic benefit factors). The overall satisfaction gap shows significant differences with an Asymp. Sig. score of 0.001. Table 7 shows the results of the comparison of satisfaction gaps between e-wallet applications.

Since a significant difference was found in several factors, a post hoc test was conducted to determine the location of the significant difference. The test was performed with the Mann–Whitney test. A significance value below 0.05 is considered to have a significant difference in the satisfaction gap. In this study, six combinations of e-wallet applications were produced, which are shown in Table 8.

4.3. Kano Model Result. There are 974 participants for the Kano analysis. Table 9 shows the results of the Kano model in this study. From this research, the result shows that all attributes belong to the one-dimensional category. This means that when these attributes are present and functioning properly, the user will be satisfied. If these attributes do not exist, then the user will feel dissatisfied.

4.4. Multinomial Logistic Regression Result. This study employed numerous variables for MLR to calculate the coefficient for each factor and its effect on user satisfaction. To facilitate the formation of MLR models, a factor analysis must be performed first. Factor analysis is aimed at combining several variables into a group based on the highest attachment between variables.

Table 4: Score and gaps in the expectation and perception of OVO.

No.	Factor	Expectations		Perceptions		Gap (P-E)	*P* value
		Mean	SD	Mean	SD		
1	Security	4.32	0.68	3.95	0.74	−0.37	0.00
	Sec1	4.39	0.74	4.07	0.82	−0.33	0.00
	Sec2	4.28	0.83	3.90	0.90	−0.38	0.00
	Sec3	4.29	0.81	3.87	0.90	−0.42	0.00
	Sec4	4.32	0.77	3.95	0.83	−0.38	0.00
	Sec5	4.33	0.77	3.99	0.87	−0.34	0.00
2	Efficiency	4.44	0.67	4.14	0.71	−0.30	0.00
	Eff1	4.43	0.73	4.10	0.83	−0.33	0.00
	Eff2	4.45	0.73	4.18	0.82	−0.27	0.00
	Eff3	4.43	0.77	4.03	0.86	−0.41	0.00
	Eff4	4.44	0.74	4.18	0.82	−0.26	0.00
	Eff5	4.44	0.75	4.20	0.84	−0.24	0.00
3	Reliability	4.24	0.74	3.73	0.80	−0.51	0.00
	Rel1	4.24	0.85	3.59	0.99	−0.65	0.00
	Rel2	4.13	0.89	3.47	0.96	−0.66	0.00
	Rel3	4.30	0.79	3.88	0.87	−0.42	0.00
	Rel4	4.32	0.78	3.99	0.84	−0.33	0.00
4	Customer service	4.14	0.82	3.65	0.84	−0.49	0.00
	Cs1	4.18	0.88	3.72	0.96	−0.46	0.00
	Cs2	4.15	0.88	3.69	0.92	−0.46	0.00
	Cs3	4.12	0.88	3.65	0.91	−0.47	0.00
	Cs4	4.12	0.88	3.56	0.92	−0.57	0.00
5	Interface design	4.31	0.75	3.97	0.81	−0.34	0.00
	Int1	4.26	0.81	3.88	0.89	−0.39	0.00
	Int2	4.33	0.78	4.02	0.86	−0.32	0.00
	Int3	4.32	0.79	4.02	0.88	−0.30	0.00
6	Economic benefit	4.35	0.72	3.95	0.75	−0.40	0.00
	Eco1	4.44	0.77	4.18	0.89	−0.27	0.00
	Eco2	4.33	0.86	3.84	1.07	−0.49	0.00
	Eco3	4.25	0.86	3.76	0.97	−0.49	0.00
	Eco4	4.36	0.81	4.02	0.91	−0.34	0.00
7	Satisfaction	4.35	0.76	3.97	0.80	−0.38	0.00

4.4.1. MLR Result of GoPay. Factor analysis on GoPay obtained the following results. The best MLR results for the very satisfied category are as follows:

$$g5(X) = 3.738 + 1.590\,\text{Fac2} + 0.708\,\text{Fac3} + 1.577\,\text{Fac4} + 0.152\,\text{Fac5}. \quad (1)$$

The coefficient of determination of this MLR is 35.1%.

Based on the MLR equation for GoPay, all factors positively influence customer satisfaction. To enhance GoPay customer satisfaction, factors 2 and 4 have a greater impact compared to other factors. Factor 2 (Fac2) consists of security (Sec1, Sec2, Sec3, Sec4, and Sec5 variables) with a coefficient of 1.590, factor 3 (Fac3) consists of customer service (Cs1, Cs2, Cs3, and Cs4 variables) with a coefficient of 0.708, factor 4 (Fac4) consists of economic benefit (Eco1, Eco2, Eco3, and Eco4 variables) with a coefficient of 1.577, and factor 5 (Fac5) consists of reliability (Rel1, Rel2, and Rel3 variables) with a coefficient of 0.152. The MLR results of GoPay will be combined with the analysis of satisfaction gap and the Kano model to provide improvement suggestions in Section 4.7.

4.4.2. MLR Result of OVO. Factor analysis on OVO obtained the following results. The best MLR results for the very satisfied category are as follows:

$$g5(X) = 10.869 + 2.682\,\text{Fac1} + 3.337\,\text{Fac3} + 6.660\,\text{Fac4}. \quad (2)$$

The coefficient of determination of this MLR is 60.4%.

Table 5: Score and gaps in the expectation and perception of DANA.

No.	Factor	Expectations		Perceptions		Gap (P-E)	*P* value
		Mean	SD	Mean	SD		
1	Security	4.23	0.72	3.96	0.72	−0.27	0.00
	Sec1	4.32	0.77	4.08	0.79	−0.24	0.00
	Sec2	4.21	0.81	3.95	0.85	−0.26	0.00
	Sec3	4.18	0.85	3.92	0.86	−0.26	0.00
	Sec4	4.19	0.81	3.92	0.83	−0.27	0.00
	Sec5	4.24	0.82	3.93	0.90	−0.31	0.00
2	Efficiency	4.37	0.68	4.06	0.68	−0.30	0.00
	Eff1	4.35	0.77	4.08	0.86	−0.27	0.00
	Eff2	4.41	0.75	4.20	0.83	−0.22	0.00
	Eff3	4.31	0.81	3.72	0.87	−0.59	0.00
	Eff4	4.39	0.75	4.14	0.81	−0.25	0.00
	Eff5	4.38	0.77	4.19	0.79	−0.19	0.00
3	Reliability	4.21	0.76	3.75	0.76	−0.46	0.00
	Rel1	4.20	0.83	3.61	0.91	−0.59	0.00
	Rel2	4.15	0.88	3.56	0.95	−0.59	0.00
	Rel3	4.25	0.82	3.89	0.85	−0.36	0.00
	Rel4	4.25	0.81	3.95	0.84	−0.30	0.00
4	Customer service	4.07	0.84	3.63	0.81	−0.44	0.00
	Cs1	4.09	0.88	3.65	0.90	−0.44	0.00
	Cs2	4.08	0.89	3.65	0.88	−0.43	0.00
	Cs3	4.06	0.89	3.63	0.89	−0.43	0.00
	Cs4	4.07	0.91	3.59	0.89	−0.47	0.00
5	Interface design	4.25	0.79	3.98	0.79	−0.27	0.00
	Int1	4.23	0.82	3.93	0.85	−0.30	0.00
	Int2	4.26	0.83	4.00	0.84	−0.26	0.00
	Int3	4.25	0.85	3.99	0.86	−0.26	0.00
6	Economic benefit	4.32	0.73	4.01	0.72	−0.31	0.00
	Eco1	4.33	0.85	3.95	0.96	−0.39	0.00
	Eco2	4.33	0.82	4.07	0.95	−0.26	0.00
	Eco3	4.27	0.86	3.98	0.96	−0.29	0.00
	Eco4	4.33	0.81	4.02	0.88	−0.31	0.00
7	Satisfaction	4.33	0.79	4.06	0.77	−0.27	0.00

According to the MLR equation for OVO, all factors positively influence customer satisfaction. To enhance OVO customer satisfaction, factor 4 has a greater impact compared to other factors. Factor 1 (Fac1) consists of efficiency, interface design, and economic benefit (Eff2, Eff5, Int1, Int2, Int3, Eco1, Eco2, Eco3, and Eco4 variables) with a coefficient of 2.682. Factor 3 (Fac3) consists of security (Sec1, Sec2, Sec3, Sec4, and Sec5 variables) with a coefficient of 3.337, while factor 4 (Fac4) consists of customer service (Cs1, Cs2, Cs3, and Cs4 variables) with a coefficient of 6.660. The MLR results of OVO will be combined with the analysis of satisfaction gap and Kano model to provide improvement suggestions in Section 4.7.

4.4.3. MLR Result of DANA. Factor analysis on DANA obtained the following results. The best MLR results for the very satisfied category are as follows:

$$g5(\mathrm{X}) = 9.287 + 4.770\,\mathrm{Fac1} + 2.695\,\mathrm{Fac3} + 3.879\,\mathrm{Fac4}. \quad (3)$$

The coefficient of determination of this MLR is 57.1%.

According to the MLR equation for DANA, all factors positively influence customer satisfaction. To enhance DANA customer satisfaction, Factor 1 has a greater impact compared to other factors. Factor 1 (Fac1) consists of efficiency, reliability, interface design, and economic benefit (Eff1, Eff2, Eff3, Eff4, Eff5, Rel1, Rel2, Rel3, Rel4, Int1, Int2, Int3, and Eco1 variables) with a coefficient of 4.770, factor 3 (Fac3) consists of customer service (Cs1, Cs2, Cs3, and Cs4 variables) with a coefficient of 2.695, and factor 4 (Fac4) consists of economic benefit (Eco2, Eco3, and Eco4 variables) with a coefficient of 3.879. The MLR results of DANA will be combined with the analysis of satisfaction

Table 6: Score and gaps in the expectation and perception of LinkAja.

No.	Factor	Expectations		Perceptions		Gap (P-E)	*P* value
		Mean	SD	Mean	SD		
1	Security	4.26	0.72	3.90	0.78	−0.36	0.00
	Sec1	4.30	0.77	3.96	0.87	−0.35	0.00
	Sec2	4.26	0.81	3.90	0.92	−0.36	0.00
	Sec3	4.26	0.84	3.93	0.91	−0.32	0.00
	Sec4	4.21	0.85	3.89	0.90	−0.31	0.00
	Sec5	4.27	0.79	3.83	0.96	−0.45	0.00
2	Efficiency	4.31	0.73	3.82	0.79	−0.49	0.00
	Eff1	4.33	0.78	3.89	0.94	−0.44	0.00
	Eff2	4.35	0.77	4.03	0.88	−0.32	0.00
	Eff3	4.24	0.90	3.34	0.99	−0.90	0.00
	Eff4	4.32	0.78	3.91	0.92	−0.41	0.00
	Eff5	4.32	0.78	3.94	0.91	−0.38	0.00
3	Reliability	4.21	0.78	3.57	0.84	−0.64	0.00
	Rel1	4.21	0.90	3.43	1.00	−0.78	0.00
	Rel2	4.13	0.88	3.35	1.03	−0.78	0.00
	Rel3	4.26	0.80	3.77	0.88	−0.49	0.00
	Rel4	4.23	0.80	3.73	0.90	−0.50	0.00
4	Customer service	4.09	0.85	3.50	0.84	−0.59	0.00
	Cs1	4.08	0.92	3.50	0.95	−0.58	0.00
	Cs2	4.10	0.90	3.51	0.90	−0.59	0.00
	Cs3	4.08	0.89	3.51	0.90	−0.57	0.00
	Cs4	4.09	0.92	3.48	0.92	−0.61	0.00
5	Interface design	4.25	0.79	3.85	0.89	−0.39	0.00
	Int1	4.22	0.85	3.79	0.96	−0.44	0.00
	Int2	4.26	0.81	3.91	0.92	−0.35	0.00
	Int3	4.26	0.82	3.86	0.94	−0.40	0.00
6	Economic benefit	4.27	0.75	3.77	0.81	−0.51	0.00
	Eco1	4.25	0.88	3.54	1.08	−0.71	0.00
	Eco2	4.33	0.83	3.98	1.00	−0.35	0.00
	Eco3	4.29	0.85	3.90	0.97	−0.39	0.00
	Eco4	4.23	0.87	3.65	1.01	−0.58	0.00
7	Satisfaction	4.21	0.81	3.76	0.91	−0.45	0.00

Table 7: Comparison of satisfaction gap differences between e-wallet applications.

No.	Factor	Asymp. Sig.	Meaning
1	Gap_Security	0.048	Significant
2	Gap_Efficiency	0.000	Significant
3	Gap_Reliability	0.018	Significant
4	Gap_CustomerService	0.053	Not significant
5	Gap_InterfaceDesign	0.001	Significant
6	Gap_EconomicBenefit	0.000	Significant
7	Gap_Satisfaction	0.001	Significant

gap and Kano model categories to provide improvement suggestions in Section 4.7.

4.4.4. MLR Result of LinkAja. Factor analysis on LinkAja obtained the following results. The best MLR results for the very satisfied category are as follows:

$$g5(X) = 4.831 + 2.983\,\text{Fac2} + 2.261\,\text{Fac3} + 2.172\,\text{Fac4}. \quad (4)$$

The coefficient of determination of this MLR is 43.1%.

According to the MLR equation for LinkAja, all factors positively influence customer satisfaction. To enhance LinkAja customer satisfaction, factor 2 has a greater impact compared to other factors. Factor 2 (Fac2) consists of security and economic benefit (Sec1, Sec2, Sec3, Sec4, Sec5, and

Table 8: Post hoc test results for the comparison of satisfaction gap between e-wallet applications.

No.	Gap	*P* value					
		GoPay vs. OVO	GoPay vs. DANA	GoPay vs. LinkAja	OVO vs. DANA	OVO vs. LinkAja	DANA Vs. LinkAja
1	Security	0.554	0.055	0.440	0.021	0.790	0.013
2	Efficiency	0.257	0.906	0.000	0.298	0.000	0.000
3	Reliability	0.807	0.188	0.034	0.307	0.027	0.002
4	Interface design	0.014	0.321	0.000	0.162	0.115	0.005
5	Economic benefit	0.000	0.000	0.003	0.082	0.006	0.000
6	Satisfaction	0.324	0.071	0.017	0.008	0.155	0.000

Table 9: Result of the Kano model classification.

Factors		Kano model classification						Category
		A	M	R	O	I	Q	
Security	Sec1	27	232	13	633	55	14	O
	Sec2	20	196	17	677	46	18	O
	Sec3	17	157	17	681	41	61	O
	Sec4	48	174	14	641	78	19	O
	Sec5	150	139	12	532	128	13	O
Efficiency	Eff1	220	93	8	537	101	15	O
	Eff2	178	96	13	576	95	16	O
	Eff3	239	85	11	450	170	19	O
	Eff4	213	101	13	535	96	16	O
	Eff5	206	95	14	552	93	14	O
Reliability	Rel1	156	136	16	533	115	18	O
	Rel2	149	164	11	508	124	18	O
	Rel3	159	123	10	583	85	14	O
	Rel4	139	127	15	578	101	14	O
Customer service	Cs1	111	196	13	497	140	17	O
	Cs2	88	208	13	532	120	13	O
	Cs3	106	196	11	522	123	16	O
	Cs4	94	207	11	551	97	14	O
Interface design	Int1	285	90	11	393	182	13	O
	Int2	257	100	16	437	149	15	O
	Int3	258	89	12	455	144	16	O
Economic benefit	Eco1	271	85	16	485	103	14	O
	Eco2	219	105	11	501	119	19	O
	Eco3	204	98	11	476	170	15	O
	Eco4	250	77	15	466	147	19	O

Eco2 variables) with a coefficient of 2.983. Factor 3 (Fac3) consists of customer service (Cs1, Cs2, Cs3, and Cs4 variables) with a coefficient of 2.261, and factor 4 (Fac4) consists of reliability (Rel1, Rel2, Rel3, and Rel4 variables) with a coefficient of 2.172. The MLR results of LinkAja will be combined with the analysis of satisfaction gap and Kano model categories to provide improvement suggestions in Section 4.7.

4.5. Comparative Analysis of User Satisfaction Based on Perception-Expectations. A comparison of user satisfaction levels based on expectations and perceptions found that all factors in this study were negative. This shows user dissatisfaction. The expectation-perception comparison showed many variables with negative gap values. The negative values can be due to the user's high expectation value, which does not allow the user's perceived value to exceed it [60]. Users' expectations will continue to increase along with the perceptions they feel about a product or service [61]. Based on this opinion, the high expectations of users in this study might be caused by their equally high perception in the previous

period. Aside from given reasons as to why the results are negative, studies from Putri et al. [62] found that when marketers can meet the psychological needs of consumers, such as by providing comfort, understanding it, and making it important, therefore when customer expectation and satisfaction does not meet, they would not feel the need to use or value the applications highly. e-wallet offers users safe, practical, easy, and economic benefits (discounts). These benefits will build the expectations of users. The safety factor is an important factor in relation to finance; hence, this leads to higher user expectations. However, over time, there have been cases of e-wallet balances being robbed. Cases like this will have the word-of-mouth effect that can affect the perception of other users. Based on the Indonesian government institute, which handles cybersecurity, from January 2020 until September 2020, they have received 649 online fraud reports, making the victims lose money from their e-wallet balances [63].

Aside from safety, the economic benefit factor also has importance for users. Consumers often consider the usage of e-wallet because of its cashback or discounts. As a form of promotion, e-wallet generally provides customers cashback or large discounts. After the promotion period, the cashback or reward point will decrease or no longer be available. This will certainly affect the perception of e-wallet users. According to the research done by Putri et al. [62] and Fikri and Lisdayanti [64], cashback promotion positively and significantly affects the intention to use a certain e-wallet.

Competitors can also influence a user's expectations of a product or service [65]. One of the competitors for e-wallet is financial services such as debit cards. Debit cards can now be used to make payments in various places. With its practical and flexible use, e-wallet users tend to make comparisons. In relation to user expectations influenced by competitors, this can be seen in LinkAja. Compared with the other three providers, LinkAja is the youngest e-wallet. Although the service is new, users' expectations for this application are quite high. This will potentially cause user perceptions of LinkAja to fail to meet users' expectations.

In addition to finding the significant difference between expectations and perceptions, further analysis can be done by looking at the mapping of expectations and perceptions into the four quadrants [66]. Mapping perception and expectation values can help determine priorities for improving the e-wallet application in the future. There are four quadrants, namely, quadrant I, which means expectations and perceptions are at high values; quadrant II, which means expectations are at high values, but perceptions are at low values; quadrant III, which means expectations and perceptions are at low values; and quadrant IV, which means low expectation values but the perceived value is relatively high. In this case, with the high expectations that need to be met to achieve user satisfaction, quadrant II is the first priority for improvement. Figures 6–9 show the results of mapping expectations and perceptions.

4.6. Comparative Analysis of Satisfaction Gap between e-wallet Applications. A comparison of satisfaction gaps between

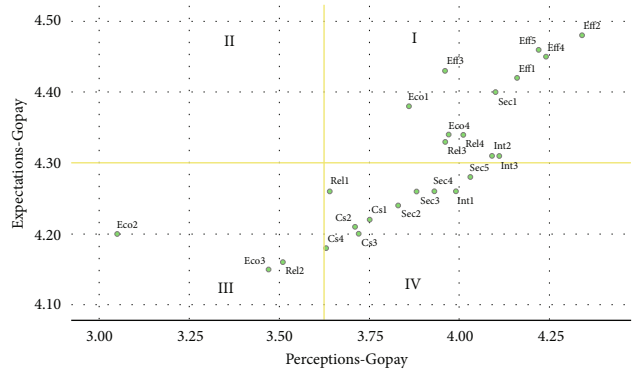


Figure 6: Expectations and perceptions mapping for GoPay.

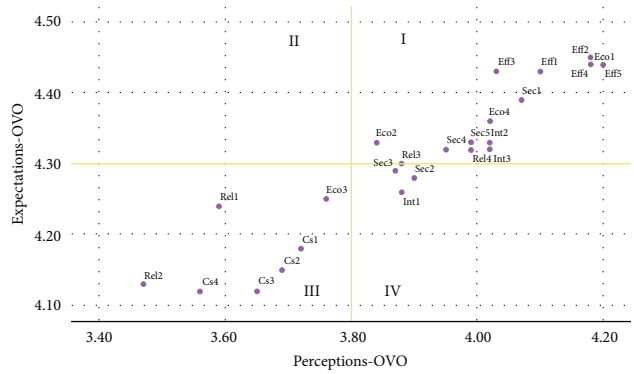


Figure 7: Expectations and perceptions mapping for OVO.

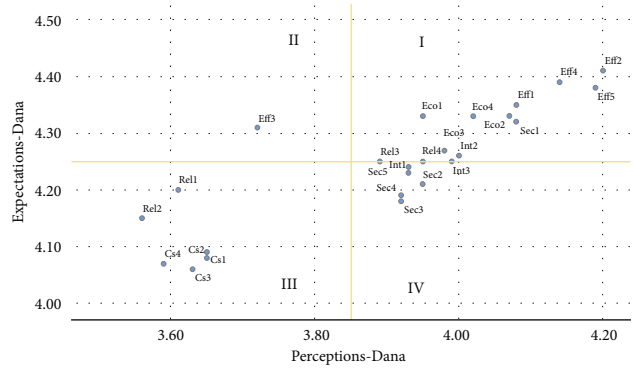


Figure 8: Expectations and perceptions mapping for DANA.

e-wallets revealed no significant difference in customer service factors. Significant differences are found in the factors of security, efficiency, reliability, interface design, economic benefits, and overall satisfaction. In terms of security, DANA is the best e-wallet, with the smallest score at −0.27. DANA offers security services to protect customers during transactions and ensures complete security for all user cash saved in the DANA application [67]. Also, DANA offers a money-back guarantee in case funds are lost due to a disruption or issues during the transaction. GoPay is the best e-wallet for the efficiency factor, scoring −0.27. The efficiency factors (ease of use and speed) are the main reasons users utilize GoPay

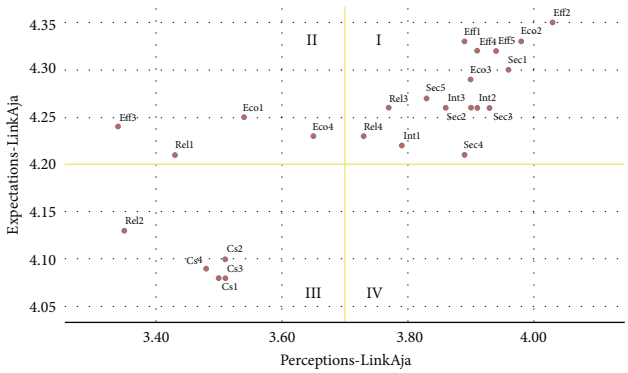


Figure 9: Expectations and perceptions mapping for LinkAja.

[68]. For the reliability factor, DANA is the best. In terms of interface design, GoPay scored best compared with OVO, DANA, and LinkAja. This research supports findings from Kesumastuti [69] that GoPay is still the most popular e-wallet because of its user interface and well-known functions, even though consumers may use multiple e-wallets. DANA is the best in terms of the economic benefit factor. Due to its affiliation with numerous businesses that grant users various benefits, DANA offers tremendous advantageous while making transactions [70]. DANA also offers promos and discounts to users [67]. DANA showed the best result for the overall satisfaction factor, with the smallest satisfaction gap. LinkAja, on the other hand, had the biggest satisfaction gap.

4.7. Priority Improvement Analysis for Each Application. In this study, the third objective is to provide improvement suggestions for each e-wallet application. The determination of improvement priorities is done by combining the results of MLR, the expectation and perception mapping, and the Kano model categories. However, the results of the Kano model in this study for all attributes fall into the one-dimensional category. To determine the priority for improvement, it is necessary to calculate the average satisfaction coefficient (ASC) value [71]. ASC values are obtained from the average between the satisfaction index and dissatisfaction identities. After getting the ASC value, the values are sorted from largest to smallest. Table 10 shows the results of the priority for improvement based on the Kano model.

Furthermore, combining MLR coefficients, the expectation and perception barrier mapping and the Kano model results can help provide suggestions for improvement for each e-wallet application. Tables 11–14 display priority suggestions for improvement for each e-wallet application.

For GoPay, the priority for improvement heavily relies on their security factor, as the results suggest that all of the security factor has the highest priority based on MLR coefficient, quadrant, and ASC score, which means that users are expecting more than what they truly experience from using GoPay application (Table 11). For the Sec1 variable, users expected this application to be safer when doing transaction using this application; this variable is the top priority for improving GoPay application. For Sec3, users believe that this application will not misuse their personal information; this variable is placed 2nd for the improvement priority.

Table 10: Kano model result.

No.	Variable	SI	DI	ASC
1	Sec3	0.78	-0.94	0.86
2	Sec2	0.74	-0.93	0.84
3	Sec1	0.70	-0.91	0.81
4	Sec4	0.73	-0.87	0.80
5	Rel3	0.78	-0.74	0.76
6	Eff2	0.80	-0.71	0.75
7	Rel4	0.76	-0.75	0.75
8	Eff5	0.80	-0.68	0.74
9	Cs4	0.68	-0.80	0.74
10	Eff4	0.79	-0.67	0.73
11	Eff1	0.80	-0.66	0.73
12	Rel1	0.73	-0.71	0.72
13	Cs2	0.65	-0.78	0.72
14	Sec5	0.72	-0.71	0.71
15	Cs3	0.66	-0.76	0.71
16	Rel2	0.70	-0.71	0.70
17	Eco1	0.80	-0.60	0.70
18	Eco2	0.76	-0.64	0.70
19	Cs1	0.64	-0.73	0.69
20	Eco4	0.76	-0.58	0.67
21	Int3	0.75	-0.58	0.66
22	Eco3	0.72	-0.61	0.66
23	Int2	0.74	-0.57	0.65
24	Eff3	0.73	-0.57	0.65
25	Int1	0.71	-0.51	0.61

For Sec2 variable, users feel confident that their data is being protected while using this application; this variable is placed 3rd for the improvement priority. For the Sec4 variable, users expected that they can trust this application as a whole; this variable is placed 4th for the improvement priority.

For OVO, the priority for improvement relies on their customer service factor, as the results suggest that the customer service factor has the highest priority based on MLR coefficient, quadrant, and ASC score which means that the users are expecting more than what they truly experience from using OVO application and to be noted that the MLR coefficient gap between customer service factor and the other factor is quite high which means this factor became the top priority for improving OVO application (Table 12). For CS4 variable, users expected that when they contacted customer service, their complaint is handled properly; this variable placed 1st for improvement priority. For CS2 variable, users expected that customer service personnel are always sympathetic and willing to help them; this variable placed 2nd for improvement priority. For CS3 variable, users expected that customer service personnel would have the sufficient knowledge and users would get the right explanation; this variable placed 3rd for improvement priority. For CS1, users expected the application to provide a contact line that could be contacted promptly; this variable placed 4th for the improvement priority.

Table 11: Priority for improvement of GoPay.

No.	Factor	Variable	MLR coef.	Quadrant	ASC score	Priority
1	Factor 2	Sec1	1.590	I	0.81	1
		Sec3	1.590	IV	0.86	2
		Sec2	1.590	IV	0.84	3
		Sec4	1.590	IV	0.8	4
		Sec5	1.590	IV	0.71	5
2	Factor 4	Eco1	1.577	I	0.7	6
		Eco4	1.577	I	0.67	7
		Eco2	1.577	III	0.7	8
		Eco3	1.577	III	0.66	9
3	Factor 3	CS4	0.708	IV	0.74	10
		CS2	0.708	IV	0.72	11
		CS3	0.708	IV	0.71	12
		CS1	0.708	IV	0.69	13
4	Factor 5	Rel3	0.152	I	0.76	14
		Rel4	0.152	I	0.75	15
		Rel1	0.152	IV	0.72	16
		Rel2	0.152	III	0.7	17

Table 12: Priority for improvement of OVO.

No.	Factor	Variable	MLR coef.	Quadrant	ASC score	Priority
1	Factor 4	CS4	6.660	III	0.74	1
		CS2	6.660	III	0.72	2
		CS3	6.660	III	0.71	3
		CS1	6.660	III	0.69	4
2	Factor 3	Sec3	3.337	I	0.86	5
		Sec4	3.337	I	0.8	6
		Sec5	3.337	I	0.71	7
		Sec2	3.337	IV	0.84	8
		Sec1	3.337	IV	0.81	9
3	Factor 1	Eff2	2.682	I	0.75	10
		Eff5	2.682	I	0.74	11
		Eco1	2.682	I	0.7	12
		Eco2	2.682	I	0.7	13
		Eco4	2.682	I	0.67	14
		Int3	2.682	I	0.66	15
		Int2	2.682	I	0.65	16
		Int1	2.682	IV	0.61	17
		Eco3	2.682	III	0.66	18

For DANA, the priority for improvement relies on their efficiency of their application, as the results suggest that efficiency factor has the highest priority based on MLR coefficient, quadrant, and ASC score which means that the users are expecting more than what they truly experience from using DANA application (Table 13). For Eff3 variable, users expected that this application can be used in various places or merchants; this placed 1st for the improvement priority. For Eff2 variable, users expected that this application is easy to use or operate; this placed 2nd for the improvement priority. For Rel4 variable, users expected that this payment application would be reliable; this variable placed 3rd for the improvement priority. For Eff5 variable, users expected that this application can save time in the payment process; this variable placed 4th for the improvement priority.

Table 13: Priority for improvement of DANA.

No.	Factor	Variable	MLR coef.	Quadrant	ASC score	Priority
1	Factor 1	Eff3	4.770	II	0.65	1
		Eff2	4.770	I	0.75	2
		Rel4	4.770	I	0.75	3
		Eff5	4.770	I	0.74	4
		Eff4	4.770	I	0.73	5
		Eff1	4.770	I	0.73	6
		Eco1	4.770	I	0.7	7
		Int3	4.770	I	0.66	8
		Int2	4.770	I	0.65	9
		Rel3	4.770	IV	0.76	10
		Int1	4.770	IV	0.61	11
		Rel1	4.770	III	0.72	12
		Rel2	4.770	III	0.70	13
2	Factor 4	Eco2	3.879	I	0.70	14
		Eco4	3.879	I	0.67	15
		Eco3	3.879	I	0.66	16
3	Factor 3	Cs4	2.695	III	0.74	17
		Cs2	2.695	III	0.72	18
		Cs3	2.695	III	0.71	19
		Cs1	2.695	III	0.69	20

Table 14: Priority for improvement of LinkAja.

No.	Factor	Variable	MLR coef.	Quadrant	ASC score	Priority
1	Factor 2	Sec3	2.983	I	0.86	1
		Sec2	2.983	I	0.84	2
		Sec1	2.983	I	0.81	3
		Sec4	2.983	I	0.80	4
		Sec5	2.983	I	0.71	5
		Eco2	2.983	I	0.7	6
2	Factor 3	Cs4	2.261	III	0.74	7
		Cs2	2.261	III	0.72	8
		Cs3	2.261	III	0.71	9
		Cs1	2.261	III	0.69	10
3	Factor 4	Rel1	2.172	II	0.72	11
		Rel3	2.172	I	0.76	12
		Rel4	2.172	I	0.75	13
		Rel2	2.172	III	0.7	14

For LinkAja, the priority for improvement relies on their security of their application, as the results suggest that security factor has the highest priority based on MLR coefficient, quadrant, and ASC score which means that the users are expecting more than what they truly experience from using LinkAja application (Table 14). For Sec3, users believe that this application will not misuse their personal information; this variable is placed 1st for the improvement priority. For Sec2 variable, users feel confident that their data is being protected while using this application; this variable is placed 2nd for the improvement priority. For the Sec1 variable, users expected this application to be safer when doing transaction using this application; this variable is placed 3rd for the improvement priority. For the Sec4 variable, users expected that they can trust this application as a whole; this variable is placed 4th for the improvement priority.

5. Conclusions

Research conducted in this study concludes that there is a significant difference in satisfaction gaps based on user perceptions and expectations for all e-wallet applications (GoPay, OVO, DANA, and LinkAja). In the four applications, it is known that the expectation gap value with the user's perception of the six factors studied has a negative value, indicating user dissatisfaction. A comparison of the satisfaction gap between e-wallet showed no significant difference for the customer service factor. On the other hand, significant differences have been observed for the other factors (security, efficiency, reliability, interface design, and economic benefits). Based on overall satisfaction, it is concluded that DANA has the least satisfaction gap.

Priority improvements were also covered in this study. For GoPay, it is necessary to boost its overall safety factor. Priority improvement for OVO is on the overall customer service factor. For DANA, improvements should be performed on overall efficiency, overall reliability, variable discount on economic benefit factors, and overall interface design. LinkAja has to improve its overall security and the administration of fee-free variable in the economic benefit factor.

Although some research has studied the various evolutions of digital commerce, there is a lack of a comprehensive knowledge map for academics on the theme of digital payment or e-wallet systems that are part of e-commerce. The findings of this research can contribute to the knowledge map on digital commerce, especially in digital payments. Factor analysis that focuses on improving customer service in digital payments can increase the sustainability of a digital payment platform in serving consumers in the digital trade era. e-wallet companies are suggested to implement improvements based on the recommendations in this research in order to be able to retain more users in the future. With the customers' expectations met, there would be a lower value in satisfaction gap which also means that the customers are satisfied with the services provided by the company.

The limitations of this research include the limited assessment of satisfaction. It was done on six factors only. Future studies may consider adding more factors to obtain a better coefficient of detriment results. Further research can be done by comparing the satisfaction level of e-wallet users in cities with those in rural areas. Moreover, future studies are suggested to include more e-wallets to comprehensively understand the competition between e-wallets in Indonesia. Future research should also consider the concept of customer loyalty in addition to customer satisfaction.

Data Availability

The data are available on request to the corresponding author.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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References

[1] S. K. Sharma and M. Sharma, "Examining the role of trust and quality dimensions in the actual usage of mobile banking services: an empirical investigation," *International Journal of Information Management*, vol. 44, pp. 65–75, 2019.

[2] K. Goyal and A. K. Kar, "Assessing Service Quality Factors in Mobile Payments - Insights Based on User Experiences in Social Media," in *Proceedings of ICETIT 2019* of *Lecture Notes in Electrical Engineering, vol 605*, Cham, 2020.

[3] Capgemini, *World Payment Report*, Capgemini Research Institute, 2020.

[4] D. Kaur, "Almost half of Asia Pacific prefers digital payments," in *Tech Wire Asia*, Tech Wire Asia, 2021.

[5] Statista, *Most used e-wallet apps by consumers in Indonesia as of July 2022*, Statista Research Department, Indonesia, 2022.

[6] M. Alshurideh, R. E. Masa'deh, and B. Al Kurdi, "The effect of customer satisfaction upon customer retention in the Jordanian mobile market: an empirical investigation," *European Journal of Economics, Finance and Administrative Sciences*, vol. 47, pp. 69–78, 2012.

[7] F. Davis and F. Davis, "Perceived usefulness, perceived ease of use, and user acceptance of information technology," *MIS Quarterly*, vol. 13, no. 3, p. 319, 1989.

[8] V. Venkatesh, Morris, Davis, and Davis, "User acceptance of information technology: toward a unified view," *MIS Quarterly*, vol. 27, no. 3, pp. 425–478, 2003.

[9] N. Singh and N. Sinha, "How perceived trust mediates merchant's intention to use a mobile wallet technology," *Journal of Retailing and Consumer Services*, vol. 52, article 101894, 2020.

[10] B. Foster, R. Hurriyati, and M. D. Johansyah, "The effect of product knowledge, perceived benefits, and perceptions of risk on Indonesian student decisions to use E-wallets for Warunk Upnormal," *Sustainability*, vol. 14, no. 11, p. 6475, 2022.

[11] N. Singh, N. Sinha, and F. J. Liébana-Cabanillas, "Determining factors in the adoption and recommendation of mobile wallet services in India: analysis of the effect of innovativeness, stress to use and social influence," *International Journal of Information Management*, vol. 50, pp. 191–205, 2020.

[12] J. Park, J. Ahn, T. Thavisay, and T. Ren, "Examining the role of anxiety and social influence in multi-benefits of mobile payment service," *Journal of Retailing and Consumer Services*, vol. 47, pp. 140–149, 2019.

[13] P. P. Patil, N. P. Rana, and Y. K. Dwivedi, "Digital Payments Adoption Research: A Meta-Analysis for Generalising the Effects of Attitude, Cost, Innovativeness, Mobility and Price Value on Behavioural Intention," in *Smart Working, Living and Organising. TDIT 2018*, IFIP Advances in Information and Communication Technology, vol 533, A. Elbanna, Y. Dwivedi, D. Bunker, and D. Wastell, Eds., Springer, Cham, 2019.

[14] Z. Kalinic, V. Marinkovic, S. Molinillo, and F. Liébana-Cabanillas, "A multi-analytical approach to peer-to-peer mobile payment acceptance prediction," *Journal of Retailing and Consumer Services*, vol. 49, pp. 143–153, 2019.

[15] F. Liébana-Cabanillas, S. Molinillo, and M. Ruiz-Montañez, "To use or not to use, that is the question: analysis of the determining factors for using NFC mobile payment systems in public transportation," *Technological Forecasting and Social Change*, vol. 139, pp. 266–276, 2019.

[16] S. H. Lim, D. J. Kim, Y. Hur, and K. Park, "An empirical study of the impacts of perceived security and knowledge on continuous intention to use mobile fintech payment services," *International Journal of Human–Computer Interaction*, vol. 35, no. 10, pp. 886–898, 2019.

[17] N. Iman, "Is mobile payment still relevant in the fintech era?," *Electronic Commerce Research and Applications*, vol. 30, pp. 72–82, 2018.

[18] B. U. Khan, R. F. Olanrewaju, A. M. Baba, A. A. Langoo, and S. Assad, "A compendious study of online payment systems: past developments, present impact, and future considerations," *International Journal of Advanced Computer Science and Applications*, vol. 8, no. 5, 2017.

[19] K. L. Y. Ming and M. Jais, "Factors affecting the intention to use e-wallets during the COVID-19 pandemic," *Gadjah Mada International Journal of Business*, vol. 24, no. 1, pp. 82–100, 2022.

[20] Y. P. Mun, H. Khalid, and D. Nadarajah, "Millennials' perception on mobile payment services in Malaysia," *Procedia Computer Science*, vol. 124, pp. 397–404, 2017.

[21] A. Bhattacherjee, "Understanding information systems continuance: an expectation-confirmation model," *MIS Quarterly*, vol. 25, no. 3, pp. 351–370, 2001.

[22] K. Goyal and A. K. Kar, "Determinants of Customer Satisfaction in Telecommunication," in *Proceedings of ICETIT 2019* of *Lecture Notes in Electrical Engineering, vol 605*, Cham, 2020.

[23] N. Mohamed, R. Hussein, N. Hidayah Ahmad Zamzuri, and H. Haghshenas, "Insights into individual's online shopping continuance intention," *Industrial Management & Data Systems*, vol. 114, no. 9, pp. 1453–1476, 2014.

[24] N. Singh, S. Srivastava, and N. Sinha, "Consumer preference and satisfaction of M-wallets: a study on north Indian consumers," *International Journal of Bank Marketing*, vol. 35, no. 6, pp. 944–965, 2017.

[25] R. K. Bagla and V. Sancheti, "Gaps in customer satisfaction with digital wallets: challenge for sustainability," *Journal of Management Development*, vol. 37, no. 6, pp. 442–451, 2018.

[26] F. R. Chalik and T. Faturohman, "Customer satisfaction of E-wallet user: an adoption of information system success model," in *Quantitative Analysis of Social and Financial Market Development*, W. A. Barnett and B. S. Sergi, Eds., vol. 30, pp. 61–83, Emerald Publishing Limited, 2022.

[27] U. Tandon, R. Kiran, and A. N. Sah, "Customer satisfaction using website functionality, perceived usability and perceived usefulness towards online shopping in India," *Information Development*, vol. 32, no. 5, pp. 1657–1673, 2016.

[28] F. Xu and J. T. Du, "Factors influencing users' satisfaction and loyalty to digital libraries in Chinese universities," *Computers in Human Behavior*, vol. 83, pp. 64–72, 2018.

[29] A. A. Alalwan, Y. K. Dwivedi, N. P. P. Rana, and M. D. Williams, "Consumer adoption of mobile banking in Jordan," *Journal of Enterprise Information Management*, vol. 29, no. 1, pp. 118–139, 2016.

[30] I. R. de Luna, F. Liébana-Cabanillas, J. Sánchez-Fernández, and F. Muñoz-Leiva, "Mobile payment is not all the same: the adoption of mobile payment systems depending on the technology applied," *Technological Forecasting and Social Change*, vol. 146, pp. 931–944, 2019.

[31] S. Du and H. Li, "The knowledge mapping of mobile commerce research: a visual analysis based on I-model," *Sustainability*, vol. 11, p. 1580, 2019.

[32] A. Chantzaras, N. K. Dimitrios, and D. S. Vlachos, "Mobile Commerce and Success Factors. Simulation and Modeling of the Problem," in *Springer Proceedings in Business and Economics* of *Strategic Innovative Marketing*, Cham, 2017.

[33] M. Theodosiou, E. Katsikea, S. Samiee, and K. Makri, "A comparison of formative versus reflective approaches for the measurement of electronic service quality," *Journal of Interactive Marketing*, vol. 47, pp. 53–67, 2019.

[34] E. Y. Huang, S.-W. Lin, and Y.-C. Fan, "M-S-QUAL: mobile service quality measurement," *Electronic Commerce Research and Applications*, vol. 14, no. 2, pp. 126–142, 2015.

[35] S. Ganguli and S. K. Roy, "Generic technology-based service quality dimensions in banking," *International Journal of Bank Marketing*, vol. 29, no. 2, pp. 168–189, 2011.

[36] S. Omar, K. Mohsen, G. Tsimonis, A. Oozeerally, and J. H. Hsu, "M-commerce: the nexus between mobile shopping service quality and loyalty," *Journal of Retailing and Consumer Services*, vol. 60, article S0969698921000345, 2021.

[37] M. Blut, N. Chowdhry, V. Mittal, and C. Brock, "E-service quality: a meta-analytic review," *Journal of Retailing*, vol. 91, no. 4, pp. 679–700, 2015.

[38] T. Laukkanen, "Consumer adoption versus rejection decisions in seemingly similar service innovations: the case of the Internet and mobile banking," *Journal of Business Research*, vol. 69, no. 7, pp. 2432–2439, 2016.

[39] M. Arcand, S. PromTep, I. Brun, and L. Rajaobelina, "Mobile banking service quality and customer relationships," *International Journal of Bank Marketing*, vol. 35, no. 7, pp. 1068–1089, 2017.

[40] C. Calvo-Porral and J.-P. Lévy-Mangin, "Switching behavior and customer satisfaction in mobile services: analyzing virtual and traditional operators," *Computers in Human Behavior*, vol. 49, pp. 532–540, 2015.

[41] S. Yuan, Y. Liu, R. Yao, and J. Liu, "An investigation of users' continuance intention towards mobile banking in China," *Information Development*, vol. 32, no. 1, pp. 20–34, 2016.

[42] R. Thakur, "What keeps mobile banking customers loyal?," *International Journal of Bank Marketing*, vol. 32, no. 7, pp. 628–646, 2014.

[43] L. Yu, *E-commerce models, players, and its future, in Advanced Methodologies and Technologies in Digital Marketing and Entrepreneurship*, D. B. A. M. Khosrow-Pour, Ed., IGI Global: Hershey, PA, USA, 2019.

[44] A. Ilmudeen, *Big data, artificial intelligence, and the Internet of things in cross-border E-commerce, in Cross-Border E-Commerce Marketing and Management*, M. R. Hoque and R. E. Bashaw, Eds., IGI Global: Hershey, PA, USA, 2021.

[45] J. Mou, Y. Cui, and K. Kurcz, "Bibliometric and visualized analysis of research on major e-commerce journals using Citespace," *Journal of Electronic Commerce Research*, vol. 20, no. 4, pp. 219–237, 2019.

[46] W.-L. Shiau and Y. K. Dwivedi, "Citation and co-citation analysis to identify core and emerging knowledge in electronic commerce research," *Scientometrics*, vol. 94, no. 3, pp. 1317–1337, 2013.

[47] S. Balasubramanian, R. A. Peterson, and S. L. Jarvenpaa, "Exploring the implications of m-commerce for markets and

marketing," *Journal of the Academy of Marketing Science*, vol. 30, no. 4, pp. 348–361, 2002.

[48] P. Y. Arjunwadkar, *FinTech: The Technology Driving Disruption in the Financial Services Industry*, Auerbach Publications, 2018.

[49] D. Herhausen, K. Kleinlercher, P. C. Verhoef, O. Emrich, and T. Rudolph, "Loyalty formation for different customer journey segments," *Journal of Retailing*, vol. 95, no. 3, pp. 9–29, 2019.

[50] R. N. Bolton, J. R. McColl-Kennedy, L. Cheung et al., "Customer experience challenges: bringing together digital, physical and social realms," *Journal of Service Management*, vol. 29, no. 5, pp. 776–808, 2018.

[51] P. Szwarc, *Researching Customer Satisfaction & Loyalty: How to Find Out What People Really Think*, Kogan Page Publishers, 2005.

[52] P. Kotler and K. L. Keller, *Marketing Management*, Pearson Education Limited, England, 15th edition, 2016.

[53] R. L. Oliver, *Satisfaction: A Behavioral Perspective on the Consumer*, Routledge, 2014.

[54] G. Kiral Ucar, D. Hasta, and M. Kaynak Malatyali, "The mediating role of perceived control and hopelessness in the relation between personal belief in a just world and life satisfaction," *Personality and Individual Differences*, vol. 143, pp. 68–73, 2019.

[55] D. W. Stampe, *Defining desire*, Routledge, 2018.

[56] D. Choi, C. Y. Chung, and J. Young, "Sustainable online shopping logistics for customer satisfaction and repeat purchasing behavior: evidence from China," *Sustainability*, vol. 11, no. 20, p. 5626, 2019.

[57] A. Parasuraman, V. A. Zeithaml, and A. Malhotra, "E-S-QUAL," *Journal of Service Research*, vol. 7, no. 3, pp. 213–233, 2005.

[58] L. Witell and M. Löfgren, "Classification of quality attributes," *Managing Service Quality*, vol. 17, no. 1, pp. 54–73, 2007.

[59] G. W. Corder and D. I. Foreman, *Nonparametric Statistics: A Step-by-Step Approach*, Wiley, 2nd edition, 2014.

[60] F. F. Khiavi, M. Qoliour, M. Saadati, Z. Dashtinejad, and I. Mirr, "Gap analysis between expectation-perception of service quality–patients' viewpoint," *Journal of Behavioral Health*, vol. 7, no. 2, pp. 53–60, 2018.

[61] C. Fornell, F. V. Morgeson III, G. T. Hult, and D. VanAmburg, *The Reign of the Customer: Customer-Centric Approaches to Improving Satisfaction*, Springer Nature, 2020.

[62] D. E. Putri, O. S. Sinaga, A. Sudirman, F. Augustinah, and E. Dharma, "Analysis of the effect of perceived ease of use, perceived usefulness, trust, and cashback promotion on intention to use E-wallet," *International Journal of Economics, Business and Management Research*, vol. 6, no. 11, pp. 63–75, 2022.

[63] A. Jatmika, *Sering Pakai Dompet Digital? Waspada Modus Penipuan Ini, in Kompas*, Harian Kompas, 2021.

[64] M. Fikri and A. Lisdayanti, "Analysing promotion mix and perceived usefulness of e-wallets: a case of Linkaja applications in Indonesia," *International Journal of Finance & Banking Studies*, vol. 9, no. 1, pp. 76–84, 2020.

[65] V. A. Zeithaml, L. L. Berry, and A. Parasuraman, "The nature and determinants of customer expectations of service," *Journal of the Academy of Marketing Science*, vol. 21, no. 1, pp. 1–12, 1993.

[66] M. E. Souri and F. Sajjadian, "Applying grey E-S-QUAL model to evaluate the gaps between expectation and perception of the customer based on E-services quality: a case study of an Iranian online retailer," *Journal of Quality Engineering and Production Optimization*, vol. 3, no. 1, pp. 67–80, 2018.

[67] R. M. Acelian and H. A. Basri, "Analysis of sales promotion, perceived ease of use and security on consumer decisions to use DANA digital wallet," *International Journal of Innovative Science and Research Technology*, vol. 6, no. 1, pp. 1436–1441, 2021.

[68] A. Taufan and R. Trisno, "Analysis of Factors That Affect Intention to Use e-Wallet through the Technology Acceptance Model Approach (Case Study: GO-PAY)," *International Journal of Science and Research*, vol. 8, no. 7, pp. 413–419, 2019.

[69] T. M. Kesumastuti, "The process of adoption interest in using digital wallet in central Jakarta (case study on go-pay users)," *International Journal of Multicultural and Multireligious Understanding*, vol. 7, no. 2, pp. 277–286, 2020.

[70] S. Isrososiawan, R. Hurriyati, and P. D. Dirgantari, "User mobile payment behavior using technology acceptance model (TAM): study of "Dana" E-wallet users," *Jurnal Minds: Manajemen Ide Dan Inspirasi*, vol. 6, no. 2, pp. 181–192, 2019.

[71] H.-Y. Jang, H. Song, and Y. Park, "Determining the importance values of quality attributes using ASC," *Journal of the Korean Society for Quality Management*, vol. 40, no. 4, pp. 589–598, 2012.