Article category : Logistic Management

Improving Service Quality Of Delivery Services Based On Heterogeneous Customer Behavior In A Developing Country: A Context During Covid-19

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ARTICLE INFORMATION

ABSTRACT

Delivery services are going through a transition phase globally due to changes in the market dynamics and growing e-commerce industries. As the delivery services of public logistics organizations have a lasting impact on customer behavior, logistics organizations are using innovative, customer-centric, and cost-effective strategies to offer customers convenient, attractive, and effective service solutions. The current study has been undertaken to analyze the effectiveness of each element of quality services of delivery services. Qualitative and quantitative research approaches were implemented based on a hundred respondents in identifying the critical issues based on the SERVQUAL method, heterogeneous customer satisfaction index (HCSI), and mapping out prioritizing the most critical problem. The study results reveal that customers are susceptible to the responsive, assurance, and empathy dimensions. These three of five dimensions are adversely influencing the satisfaction of customers.

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INTRODUCTION

COVID-19 has become a significant issue since the last year and has fundamentally changed all aspects of people's lives. Keeping distance and staying at home to avoid direct contact are two sentences that encourage people to seek alternatives to meet basic needs requiring movement. This circumstance has fueled the significant growth of e-commerce and has changed customer preferences over time in delivery services [1]. Delivery services have developed in such a way in various alternatives such as home delivery, self-pickup from package lockers, and self-pickup from convenience stores. The process of delivering packages involved at least is divided into three stages: collection, processing/sorting, and delivery (by service partners).

Indonesia, one of the biggest developing countries suffering from severe outbreaks of COVID-19, experienced very high transactions in delivery services. It can be described from the total value of merchandise sold through a customer-to-customer (C2C) exchange site over a specified period in Indonesia, which achieved more than US$ 30 billion in 2020 and was predicted to reach US$ 83 billion by 2025 [2].

Logistics service providers as delivery services were dominated by five logistics services companies: J&T, JNE, Tiki, Pos Indonesia, and DHL. Besides, delivery service companies are also supported by many local logistics services. According to the results of the 2021 Top Brand Award for Indonesian delivery services, Pos Indonesia, the country's oldest logistics company, is ranked fourth with a top brand index of 8.5 percent, a far weep uncontrollably from its first-place competitors, namely J&T, which is ranked first with a leading brand index of 33.4 percent and then followed by JNE (28.0%) and Tiki (11.2%), respectively. This trend is a challenge for PT. Pos Indonesia to continue improving the performance and the quality of service offered to consumers in order to remain competitive [3].

Furthermore, the delivery service company faces a challenge due to unsatisfactory service delivery. Some issues for the unsatisfactory, in this case, are high delivery prices for services due to distance mobility with capacity restriction, particularly during COVID-19 [4], and parcel locker delivery locations [5]. Serrano-Hernandez et al. (2021) solved the problem by considering the best transportation and route based on three criteria (economic, environmental, and social) [6]. The issue of the unavailability of same-day delivery for time delivery was developed by Kawa et al. in 2018 [7]. In addition, Zeng and Rosetti (2003) [8] and Wang et al. (2021) considered the issue related to the higher transportation cost. Besides, environmental issues such as a zero-emission urban delivery system based on the environmental perspective [9], perishable product delivery [10], and sustainable transportation [11] are considered to address. Numerous studies and applications mentioned above related to delivery service have concentrated on overcoming the issues to reduce cost and high service efficiency. On the other side, these studies disregard heterogeneous customer perspectives on the brands' service quality indicator related to poor worker response and late deliveries integrated with service quality. In contrast to this evidence, it is more difficult to quantify the quality performance of delivery operations when the function of varying customer perception over time, of

the measurement process, and the analysis of the data gathered [12]. However, as service requirements increase, more customers begin to prioritize how they feel and expect through the experience, significantly influencing the service quality and distribution process.

Quality service plays an essential role in enhancing the performance of delivery services overall. Thus, the delivery services company has to provide high-quality services that must adequately understand well, meet the needs, and exceed customer expectations. High quality of services enhances the service provider's competitive strategies, consumer loyalty, and leading among the competitors. Therefore the company prefers to provide quality services, improve the services sustainably, and avoid the offers from competitors without a specific assessment of quality indicators [13].

SERVQUAL can be utilized to measure the exact match or gap between the level of perceived and the level of customer satisfaction. Parasuraman et al. (1985) [14] were the pioneers of SERVQUAL as a technique for determining which quality criteria need to be addressed based on service quality gaps. SERVQUAL was designed to evaluate customer perceptions of service quality across five dimensions by examining the gap between consumer expectations and perceptions. Since its development for about thirty years, SERVQUAL has contributed to evaluating the quality of service to many industries. This method is prevalent and reliable in measuring service quality from a customer perspective, making consumer needs directly connected and identified. These advantages make SERVQUAL popular compared to similar techniques

used in service quality studies. Many service quality assessment studies have been carried out in many case studies, including transportation [15] and [16], telecommunications [15] [17], health services [18], banking/insurance services [19], hotels [20], education [21], tourism [22], mechanical maintenance [23] and logistics [24].

The attribute analysis that needs to be upgraded or maintained may be performed using the Importance-Performance Analysis (IPA) technique's usage of a Cartesian diagram. IPA is a technique for assessing a characteristic's degree of performance and relevance. The IPA technique is a simple-to-use strategy that facilitates decision-making for the most critical service categories needing improvement. Martilla and James (1977) introduced IPA to support companies in improving service efficiency by optimizing limited resources. The IPA method is a modern method because it is relatively simple and easy to understand. This method effectively identifies what quality attributes need priority for improvement in service and how important these attributes are from a customer perspective [26]. However, Chen (2014) identified some drawbacks in IPA methods related to the analytical framework: (a) it is influenced by measurement bias; (b) To boost the trustworthiness of management interpretations, it is usually necessary to apply a crosshair placement method; (c) It adjusts for discrepancies in quality attribute features, and (d) it disregards competitors' relative competitiveness market [27]. In overcoming these problems, Chen (2014) [27] proposed an analytical framework that is referred to as "CZIPA" (competitive ZOT service quality based on IPA). Albayrak and Caber (2015) conducted a comparison between IPA and

AIPA (Asymmetric IPA) methods that resulted from different managerial implications [28][28][28][28][27][26]. Besides, Sever (2015) also considers the weakness of the IPA methods related to the precise definition of 'importance' corresponding threshold lines and suggests ROC (Receiver Operating Characteristics) curve analysis [29]. However, some challenges appeared in the paper mainly related to scale construction dan comparability. In another study, Chen et al. (2018) expanded the innovative framework by integrating the advantage of IPA, the ZOT concept, and KANO's model to eliminate misleading assumptions between performance and importance. Besides, there is no clear definition of measuring standard. It is advantageous to incorporate SERVQUAL and IPA, assessed on a section rather than an aggregate basis [31].

The customer satisfaction index (CSI) model is a standard model that claims that SERVQUAL factors such as perceived quality (PQ), perceived value (PV), customer expectations, and a firm's image influence customer satisfaction. These are the factors that influence total customer satisfaction. The model also anticipates if a customer will be satisfied. There are some ways to calculate the CSI, including using the ACSI (American Customer Satisfaction Index), HKCSI (Hong Kong Customer Satisfaction Index), SCSB (Swedish Customer Satisfaction Barometer), and NCSB (National Customer Satisfaction Barometer) (Norwegian Customer Satisfaction Barometer) [32] [33]. Eboli and Mazzulla (2009) proposed using CSI to assess customer satisfaction by adjustment to heterogeneity [34]. The CSI will be effective as long as the importance values are close to a specific value and the weight of importance values is similar to that value.

In CSI calculation, the average importance scores are derived from the rates assessed from customers' perspectives, which could be highly diverse; the rate dispersion can be represented by the variance or standard deviation from the mean. On the other hand, satisfaction levels among users can be highly disparate. The CSI calculation does not take these heterogeneities into account. In order to address this problem, the following CSI adjustment was proposed, namely Heterogeneous CSI (HCSI) [34].

For this reason, the analysis can be reinforced by integrating SERVQUAL, IPA methods, and heterogeneous customer satisfaction index (HCSI). This research aims to map out the current circumstances of the quality attributes during the pandemic COVID-19 and assess the principal elements affecting the quality of delivery/logistics services from the standpoint of user experience and their influence on customer satisfaction with delivery services.

The importance of the research is that the logistics service provider becomes the point of contact for online customers rather than the representative or merchant. As the critical step in the e-commerce logistics process, delivery services directly connect with online shoppers. Investigating client experiences with its goods enables the logistics industry to understand better the service they give. The quality of service provided by delivery services impacts the online purchasing experience of consumers and the brand's reputation and future promotion.

RESEARCH METHOD

This research was conducted in 2020 in one of the densest populations in Indonesia, Makassar City. In this study, data were collected directly through a survey of respondents of public delivery services companies using a random sampling technique.

The systematic research was developed in five sections. The first stage identifies the problem and creates the questionnaire based on SERVQUAL dimensions. The second stage is determining the samples and collecting data through the distribution of the questionnaire. Processing data in the third stage and analysis is conducted in the fourth stage.

The last stage is result discussion and conclusions.

Instrument of Measurement

The survey of respondents used a questionnaire structured and systematically based on the five dimensions of SERVQUAL. These five dimensions are Tangible (T), Reliability (R), Responsiveness (RS), and Assurance (A). The questionnaire items in this study were rated on a 5-point Likert scale, with a range of 1 to 5, ranging from strongly disagree to strongly agree. The Likert scale is fundamental and frequently used as a psychometrics tool in research. 23 attributes distributed in five dimensions of SERVQUAL. The attributes for each of these dimensions are described in table 1.

Table 1. Criteria developed based on SERVQUAL dimensions and specific meanings

Items	Specific meanings in express quality delivery of services
T1	The employee participating in the service has a neat appearance.
T2	The employee is always nice and kind to customers.
T3	The facilities are available and adequate to customers.
T4	The office environment is clean.
R1	The employee is ready to respond to the customer's request
R2	In/On-time delivery and receiving of goods
R3	The employee provides convenience services to the customers
R4	The employee provides services in the right way (in accordance with procedures or service procedures).
R5	If the employee commits to perform the service within a certain time, he/she will not fail.
R6	The employee is fully professional in the performance of his work.
R7	The employee performs the ordered service flawlessly.
R8	The employee devotes the same attention to every customer
RS1	The employee quickly realizes the ordered services
RS2	The employee provides accurate and reliable information
RS3	The employee reacts quickly to the customer's needs.
RS4	The employee can handle customer complaints well.
A1	The employee provides the protection and security for customer's goods
A2	The employee raises a sense of security in the customer
A3	The employee is professionally prepared for his/her job.
E1	The employee treats each customer individually.
E2	The employee understands the specific needs of the customer.
E3	The employee always shows a willingness to help.
E4	It can be seen that the customer's interest lies at the heart of the employee.

Data Sampling and Measurement

The number of sample respondents is 100 based on the Slovin formula and central limit theorem, with a population of 76000 transactions in 2020. Respondents completed the questionnaires to explore what subjects perceived while interacting with the delivery services. The subjects rate their experiences and the importance of the item in the questionnaire based on the Likert scale. Besides, the questionnaires are also provided to rate the subjects' expectations of all quality service items.

In conducting the study, SERVQUAL was used to analyze the gap and evaluate the service industry's quality of service. The SERVQUAL methodology measures service quality using a multi-item scale that measures customer expectations and perceptions and the gap between the two on the five primary dimensions of service quality.

Importance Performance Analysis (IPA) is a combination of service qualities associated with specific services evaluated based on how important each attribute is to customers and how the service's perceived performance is related to each attribute. This study compares the consumer's perception of the importance of service quality with service quality performance. The Significance Performance Matrix, also known as a Cartesian diagram, depicts the average result (mean) of the entire consumer evaluation, where the coordinate axis (X) represents the degree of performance, and the coordinate axis (Y) depicts the level of importance.

The customer satisfaction index (CSI), based on the SERVQUAL perspective, was measured to explore the overall level of customer satisfaction with all the attributes that are indicators of the assessment [33]. We extend the study to explore customer satisfaction by implementing the customer satisfaction index (CSI). Eboli and Mazzulla (2009) explained that the CSI could compare to gap analysis overall. When we found the gap analysis in negative value overall, it does not mean that the customer did not well satisfy. Because the negative value can be in the range between satisfied and very satisfied scale, in this case, CSI can explore this issue as overall about what customers feel in terms of overall attributes [34]. Further, we used the adjustment of CSI to adapt the heterogeneities into account [34]. The following CSI adjustment was used, namely Heterogeneous CSI:

$$HCSI = \sum_{k=1}^{N} \left[S_k^c \cdot W_k^c \right] \qquad (1)$$

Equation (1) indicates the calculation of the human customer satisfaction index, which is obtained from the mean of satisfaction (e.g., performance and perception) and importance weight (e.g., expectation).

The mean of satisfaction obtained from customers rate on the quality of services of *k* attributes that corrected based on the standard deviation rates from all the average values and denoted as S_k^c.

S_k^c is computed by the following equation (2):

$$S_k^c = \bar{S}_k \cdot \frac{\dfrac{\bar{S}_k}{\operatorname{var}\left(S_k\right)}}{\displaystyle\sum_{k=1}^{N} \dfrac{\bar{S}_k}{\operatorname{var}\left(S_k\right)}} \cdot N \qquad (2)$$

in which,

$\overline{S}_k$: The mean of the satisfaction rates expressed by users on the service quality k attribute.

N : The number of attributes.

k : The attributes order from 1

The importance weight, denoted as W_k^c, is a weight for the k attribute calculated based on the importance rate expressed by respondents on the k attribute corrected for the standard deviation rate from the average value and the sum of the average importance rates of all the service quality attributes. The equation of the formula (3) is below:

$$W_k^c = \frac{\dfrac{\overline{I}_k}{\text{var}(I_k)}}{\displaystyle\sum_{k=1}^{N} \dfrac{\overline{I}_k}{\text{var}(I_k)}} \qquad (3)$$

In which,

$\overline{I}_k$: The mean of the importance rates expressed by users on the service quality k attribute.

N : The number of attributes.

k : The attributes order from 1

HCSI is a valuable measure of overall satisfaction since it aggregates user opinions about multiple service aspects into a single score. The more exact the attribute selection, the more accurate the assessment of total satisfaction. As a result, the qualities chosen should exhaustively explain the service elements. Customer satisfaction index criteria can be determined by index value based on table 2 below:

Table 2. CSI Criteria

Index Value (100%)	Criteria
80 < CSI <= 100	Very satisfied
60 < CSI <= 80	Satisfied
40 < CSI <= 60	Satisfied Enough
20 < CSI <= 40	Less Satisfied
00 < CSI <= 20	Not Satisfied

RESULT & DISCUSSION

The questionnaires are distributed to 100 respondents to explore their perceptions and expectation of every attribute dimension from the questionnaire. We conducted a validity and reliability test for the collected questionnaire to ensure that the instrument questionnaire was valid and reliable. For 100 samples with a degree of freedom of 98, based on a 95% confidence level, the alpha table is obtained as 0.197. Based on validity calculation, it can be stated that 23 attributes are valid because the value of validity calculation is above the benchmark value of 0.197. Further, the Cronbach alpha coefficient is also considered above the 0.6 (moderate) benchmark for the reliability test [35].

Table 3. Cronbach Alpha of SERQUAL Dimensions

SERVQUAL Dimensions	Cronbach Alpha	
	Perceived Value	Expected Value
Tangible	0.637	0.748

SERVQUAL Dimensions	Cronbach Alpha	
	Perceived Value	Expected Value
Reliability	0.809	0.875
Responsiveness	0.713	0.742
Assurance	0.644	0.770
Empathy	0.784	0.773

Besides, Nunnally and Bernstein (1994) recommend that Cronbach's alpha for more reliability is above 0.7 [36]. For detail, the Cronbach alpha coefficient is described in Table 3. The values established that the survey's findings exhibited good construct validity and reliability.

Respondents who filled out the questionnaire were distributed in several characteristics. Of all respondents who filled out the questionnaire, 68 women and 32 men. Respondents aged 20-30 years account for 73 individuals, while those between 31-40 years account for 18 people, and those beyond 41 years account for nine people. The respondents are thirty-nine students (high school and university), 21 private sectors, nine public servants, three entrepreneurs, ten housewives, and 18 others. The features

and distribution of respondents appeared random and varied, mainly owing to the dispersion of age and occupation backgrounds.

Service Quality

We collected the data and tabulated it using statistics tools by computing the number of answers from respondents. The mean value can be accessed in table 4 for both perception (e.g., performance, satisfaction) and expectation (e.g., importance) and its standard deviation (SD). The value of perception and expectation obtained in Table 4 is then calculated the difference using the equation by subtracting the value of perception from the value of expectation. In general, the expectation value is higher than the performance value for the entire attribute.

Table 4. Perception and Expectation Value

Attribute	Perception Mean (SD)	Expectation Mean (SD)	Mean difference (Gap)
T1	4.14(0.70)	4.51(0.74)	-0.37
T2	4.10(0.85)	4.35(0.80)	-0.25
T3	3.80(0.88)	4.40(0.82)	-0.60
T4	4.18(0.85)	4.56(0.80)	-0.38
R1	3.99(0.93)	4.43(0.82)	-0.44
R2	3.67(0.95)	4.44(0.83)	-0.77
R3	4.01(0.62)	4.48(0.79)	-0.47
R4	4.07(0.80)	4.45(0.86)	-0.38
R5	4.03(0.68)	4.51(0.80)	-0.48
R6	3.91(0.81)	4.40(0.85)	-0.49
R7	3.82(0.76)	4.40(0.73)	-0.58
R8	4.06(0.78)	4.49(0.80)	-0.43
RS1	3.84(0.85)	4.40(0.88)	-0.56

Attribute	Perception Mean (SD)	Expectation Mean (SD)	Mean difference (Gap)
RS2	3.98(0.78)	4.51(0.69)	-0.53
RS3	3.92(0.88)	4.53(0.79)	-0.61
RS4	3.90(0.84)	4.52(0.79)	-0.62
A1	3.98(0.82)	4.59(0.74)	-0.61
A2	4.05(0.79)	4.50(0.79)	-0.45
A3	3.98(0.78)	4.48(0.86)	-0.50
E1	3.95(0.75)	4.54(0.79)	-0.59
E2	4.18(0.78)	4.64(0.71)	-0.46
E3	4.09(0.78)	4.61(0.76)	-0.52
E4	4.09(0.87)	4.63(0.70)	-0.54

The following is the distribution of the value and the gap value calculation for each dimension using statistics tools in table 5. From dimensions perspective, it can be observed that the highest gap is responsiveness with a -0.58 index, and then followed by empathy, assurance, and reliability, respectively. The tangible dimension gets the lowest gap with a -0.40 index.

Table 5. Perception and Expectation Value Based on SERVQUAL Dimensions

Dimension	Perception	Expectation	Gap
Tangible	4.06	4.46	-0.40
Reliability	3.95	4.45	-0.51
Responsiveness	3.91	4.49	-0.58
Assurance	4.00	4.52	-0.52
Empathy	4.08	4.61	-0.53

Figure 1 shows the gap between perception and expectation of every attribute. As observed, overall, all attributes have a negative gap, which means the industry's performance is experiencing lower than expected. There are 12 attributes with a value even lower than the average value of the perception-expectation gap. When examined further, it is clear that this region includes all of the responsiveness dimension's attributes (100 percent).

The empathy dimension comes next, with 75% of the attributes falling into the red group. And in this area, assurance is at 67 percent, or two of the three attributes.
Then there's reliability, which has two attributes, and tangible dimension, which has one. However, with a value of -0.77, R2 is the attribute with the most considerable disparity.

Figures 2 and figure 3 show the expectation-importance level from the highest average point to the lowest average point. The average distribution of respondents' ratings based on the expectation criteria and how important each feature is in delivery services is depicted in Figure 2. The more essential

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the attribute, the higher the value. In the opposite case, if the characteristic's value is lower, it means the attribute is still not critical to the respondent. Based on the total average value of the characteristic at the level of expectation, we split the graph into two groups. It will be classified as red if the value is lower than the general average and vice versa. There are 11 attributes that are below average, driven by the reliability dimension, which has seven attributes that are in the red zone. This previous result is also in line with that described in table 5, which shows that the reliability dimension has the lowest level of expectation among other dimensions.

The performance level shown in Figure 3 provides an overview of the average distribution of respondents' assessments based on the perception criteria and how important an attribute is in delivery services. The higher the value, the more important the attribute. On the contrary, if the value of the attribute is lower, it indicates that the attribute is not a consideration for the respondent. In the graph, we divide into two groups based on the overall average value of the attribute at the level of expectation. If the value is lower than the overall average, it will be classified as red and vice versa. There are 11 attributes that fall into the category below the average, which is dominated by the responsiveness dimension. There are four attributes that fall into the red zone. This condition is also consistent with table 5, which indicates that the responsiveness dimension has the lowest degree of perception among the other dimensions.

Importance Performance Analysis (IPA)

One of the challenges in gap analysis in service quality is determining which attributes require serious attention and which priorities are essential based on respondents' judgments. IPA, despite its drawbacks, is a popular and successful method for mapping priorities. As a result, after identifying the gap in service quality, the mapping process is performed using the IPA diagram to identify attributes in four quadrants: Quadrant 1 means high priority for improvement, quadrant two means keep up the good work, quadrant three means low priority, and quadrant 4 means possible overkill.

The distribution of 23 attributes may be shown in Figure 4, with the x and y axes partitioning the figure into four quadrants. There are two approaches to determining the cut-off line (threshold line) in dividing the graphic line into four quadrants. The first one is based on a data-centered approach which means dividing the quadrant by the mean or average value of perception level (e.g., performance) and the mean or average value of expectation level (e.g., importance). The scale-centered method is the second approach which develops quadrant by the mid-point of the scale value of perception and expectation level [37].

However, the second method is less sensitive in identifying and determining the priority attributes, particularly when the respondents have a good perception. The misplacing of the threshold line can imply misleading managerial recommendations [38]. For this reason, we used the data-centered approach to determine the threshold line of the quadrant. The average value of the perception level is 3.99 on the x-axis line, and the y-axis line is at 4.49, which is the estimated level's average value.

The most critical attributes that need to be prioritized for immediate and focus

improvement are distributed in quadrant one category. Five attributes are distributed in this quadrant. The responsiveness dimension is one in which three out of four attributes (RS2, RS3, and RS4) fall into that quadrant, totaling 75 percent. Meanwhile, there are two attributes: A1 is the assurance dimension, and E1 is the empathy dimension.

The second quadrant is the evaluation's outcome, demonstrating the respondents' excellent performance and expectations. According to this criterion, the delivery service industry should sustain performance on the criteria in this second quadrant. There are seven attributes in this category. The empathy dimension takes the lead (3 of 4 attributes), followed by the tangible dimension (2 of 4 attributes), and the rest comes from the dependability and assurance dimensions, each with one

attribute. Quadrant 3 evaluates respondents who have unimportant attributes and low expectations. The reliability dimension dominates this quadrant with three attributes, whereas other dimensions, such as responsiveness, assurance, and tangible, each have one attribute.

The last quadrant indicates a very good level of performance, but on the other hand, it is not vital from the respondent's perspective. For this reason, in general, the plans and costs incurred in this area should be transferred to the first quadrant. The reliability dimension dominates with four attributes falling into this category and one other attribute from the tangible dimension.
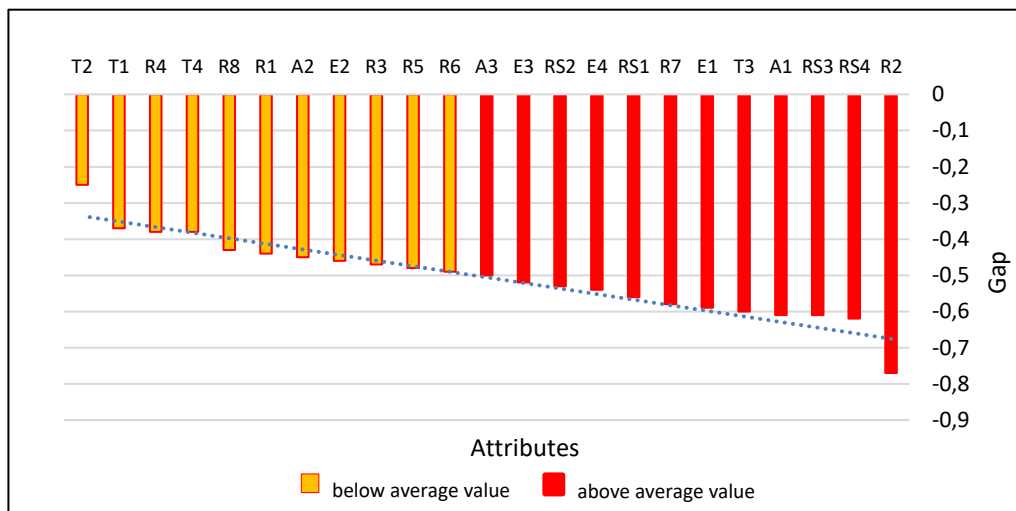

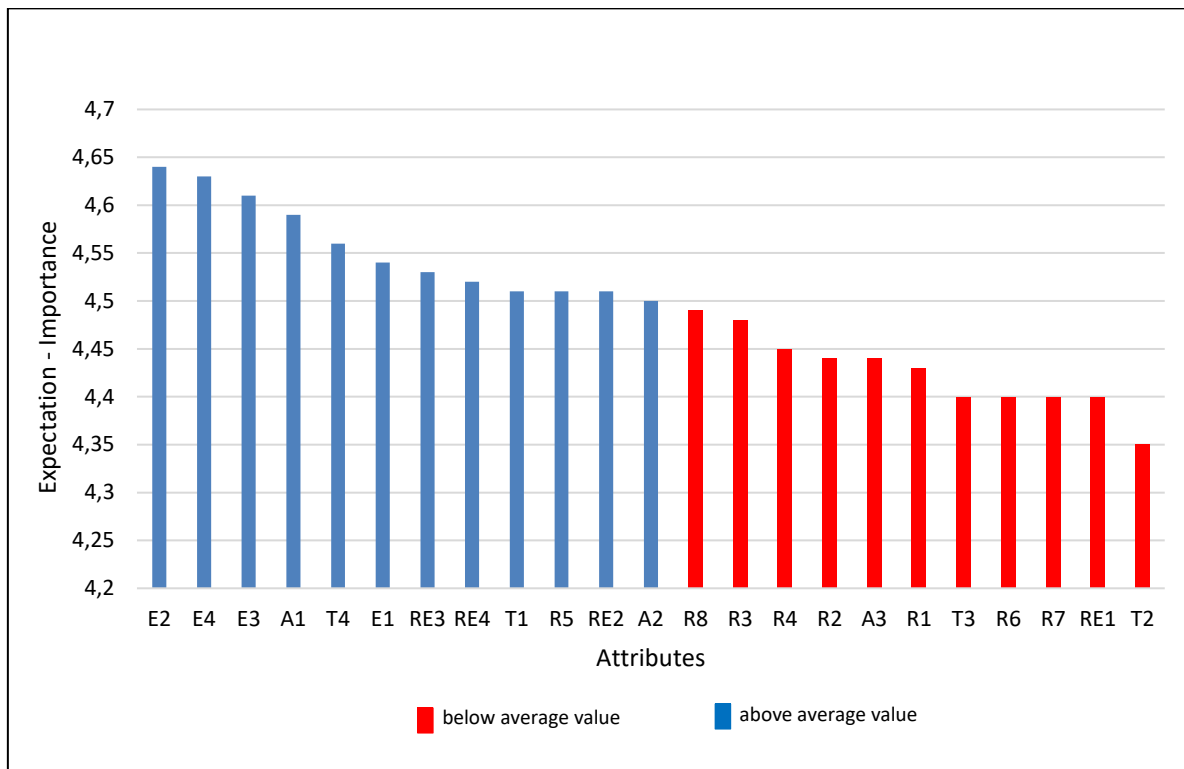**Figure 1.** The gap between perception and expectation

Figure 2. Expectation Level

Customer Satisfaction Index (CSI) and Heterogeneous Customer Satisfaction Index (HCSI)

The high level of consumer satisfaction benefits the company of delivery services, including enhanced client loyalty, higher corporate reputation, decreased pricing elasticities, lower future transaction costs, and increased personnel efficiency. To explore the overall level of satisfaction with delivery services, we calculated the satisfaction index based on the CSI calculation and the CSI adjustment, namely HCSI. Based on survey data, the calculation score of HCSI can be accessed in Table 6. The CSI score for the delivery services industry is 79.80 (on a 0-100 scale), and for HCSI score is obtained at about 80.19. In this case, we can classify that the delivery service is considered to satisfy the customer overall.
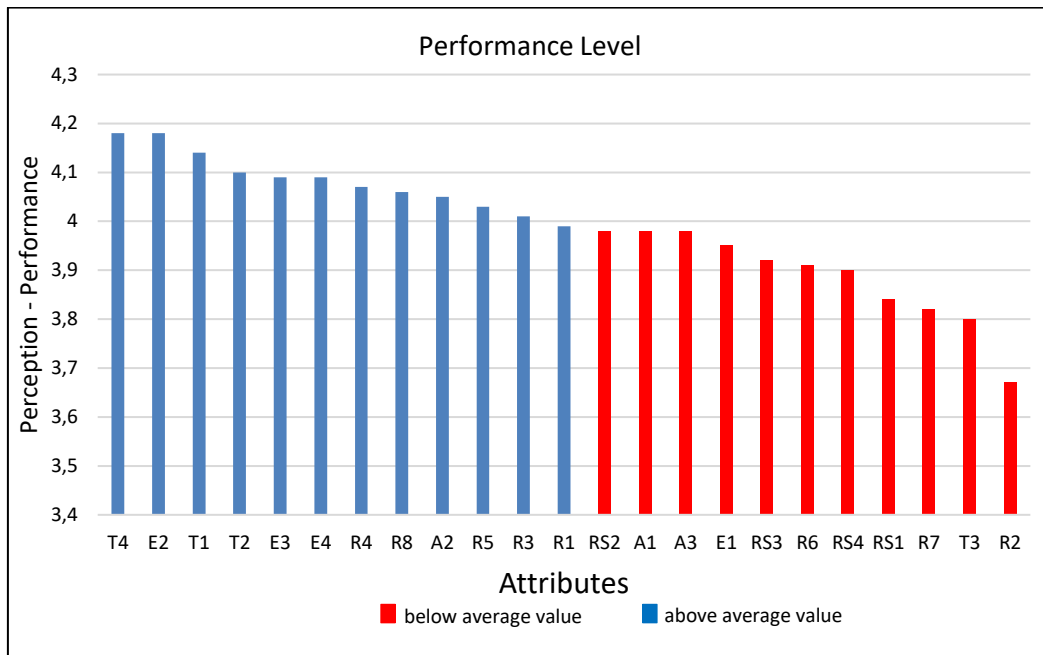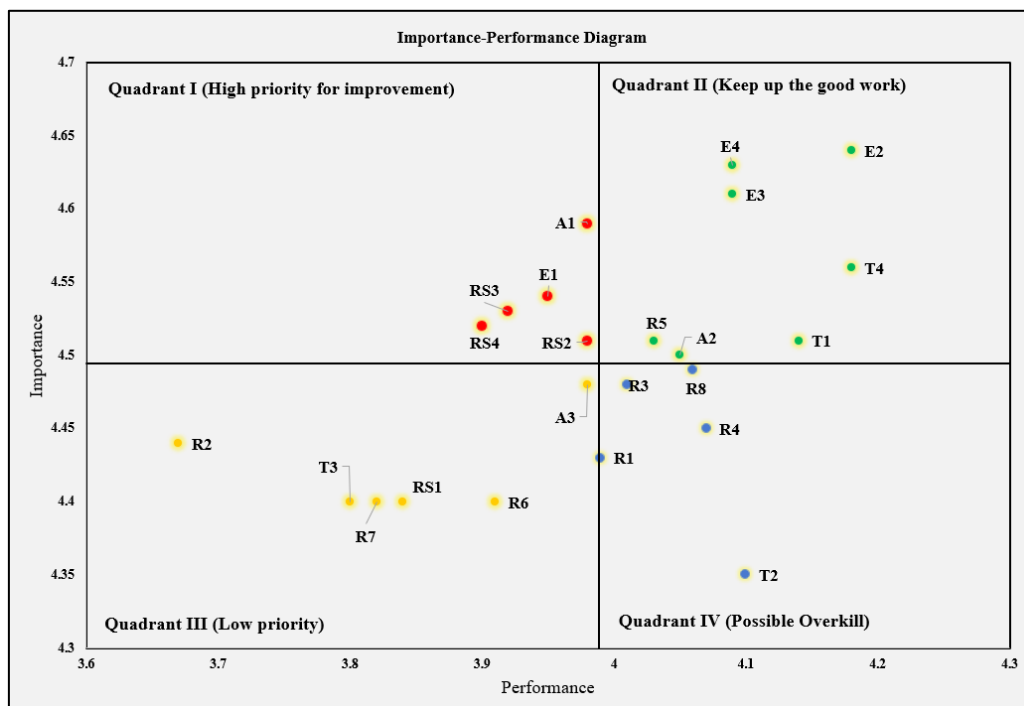
Figure 3. Performance Level

Figure 4. Importance-Performance Diagram

Furthermore, HCSI may be a beneficial instrument for assessing delivery service quality to monitor delivery service performance and meet customer expectations. The index enables the identification of the causes of customer satisfaction or dissatisfaction and the formulation of plans for enhancing service quality. HCSI introduces heterogeneity into user judgments by correcting importance and satisfaction rates based on deviation from the average value. Implementing

changes gives more weight to qualities defined by homogenous user assessments, while less weight is given to the more heterogeneous attribute.

Table 6. Customer Satisfaction Index (CSI) and Heterogeneous Customer Satisfaction Index (HCSI)

Attribute	HCSI	CSI
T1	0,23	0,21
T2	0,16	0,17
T3	0,13	0,14
T4	0,18	0,18
R1	0,14	0,15
R2	0,12	0,12
R3	0,22	0,23
R4	0,16	0,18
R5	0,20	0,21
R6	0,15	0,16
R7	0,18	0,17
R8	0,18	0,18
RS1	0,13	0,15
RS2	0,20	0,18
RS3	0,15	0,15
RS4	0,16	0,16
A1	0,18	0,17
A2	0,18	0,18
A3	0,16	0,18
E1	0,18	0,18
E2	0,22	0,19
E3	0,20	0,19
E4	0,19	0,17
Sum	4,01	4,00
Index total	**80,19**	**79,93**

DISCUSSION

The results indicate that customers generally emphasize complex service quality attributes, such as responsiveness, assurance, and empathy, while providing ratings to the delivery services. Furthermore, customer ratings also consider the attributes that need to maintain sustainably in a good performance. The gap analysis involving SERVQUAL is critically essential to address from managerial perspectives. Some advantages of gap analysis through SERVQUAL are: understanding customer expectations for service delivery, limiting the possibility of inflated evaluation, and the answer error being relatively low [39]. The mapping gap study reveals that a low-performance value for a characteristic does not imply that the attribute is relevant in the eyes of the customer. As a result, using the IPA diagram to assess the distribution of attribute enhancement and define priorities for effectiveness and efficiency is used to construct studies to

overcome these flaws. In this scenario, direct measurements are used, and researchers generally choose direct measurements (direct ratings) since they are more consistent and valid than indirect measurements. Furthermore, the attribute's relevance is better reflected [40] [37].

Managers must understand how significant satisfaction drivers are and how consumers view their performance to manage service quality successfully and provide customer satisfaction. In this context, importance-performance analysis (IPA) is a practical analytical approach that influences managerial choices [31]. However, a suitable research design, good survey questions, and directions for filling out are required before performing tests to acquire representative findings.

The management issue has consequences for developing contributions specifically to delivery services, particularly in Indonesia. According to the findings in the study case, the difference between perceptions and expectations has a considerable rate of 0.51. In simpleton's words, the difference is often around 10%, implying that the perceived performance is comparable to the respondent's expectations. All attributes show lower rates for overall delivery services. For detail, it can be identified that the lower rates existed mainly between scales four and five that indicated satisfied and very satisfied. These indications mean that the services cannot meet customer expectations, but most delivery service customers are satisfied but need more than expected. These circumstances are confirmed by the calculation of CSI and HCSI, which existed on the line between satisfied and very satisfied, as shown in table 6. On a 100 scale, the score existed in 79.80 (CSI) and 80.19 (HCSI).

Quadrant 1 in figure 5 should be the principal focus regarding improving the service quality. Three attributes in the responsiveness dimension, one in the assurance dimension, and one in the empathy dimension are among the five quadrants I attribute with a high degree of relevance but a low level of performance. Consumers perceive this feature to be extremely important in this quadrant. However, delivery service performance remains inadequate. Hence the attributes in this quadrant must be prioritized for development.

Customer satisfaction is greatly influenced by the quality of the employee delivery service variable. Customer satisfaction will rise if delivery service providers improve the quality of their employees quality. Meanwhile, the variable of employee service quality is receiving a lot of attention from customers. This means that if delivery service providers improve the quality of their employee services, customer satisfaction will rise as well. Restuputri et al. (2021) investigated the impact of employee and technical service quality on customer satisfaction[41]. As a result, companies and workers must focus on consumers and be knowledgeable in their industries, specifically providing reliable information and handling customer complaints. Besides, the employees had to be easily accessible and have good communication with customers, and COVID-19 protocol as the quality of delivery service parameters for maintenance and improvement. In addition, customers should consider certainty and assurance, particularly the protection and security of customers' goods.

Apart from the above, according to Fernandes et al. (2018), the service quality industry can empirically increase the

implications for increasing customer satisfaction [42]. However, the primary thing that needs to be considered is the company's capability to provide services [42]. More fundamentally, industrial quality services are directly supported by the company's capabilities to increase customer satisfaction. In simple terms, the company's capabilities are part of the resources that allow companies to explore other resources to be more efficient and competitive. As a result, logistics and delivery services must improve fundamentally by developing a proactive ability to recognize potential challenges and follow up on service quality on a regular basis. In addition, to support the fundamental improvement, the industry must invest in a real-time integrated information model. Furthermore, the industry needs to have the capacity to develop creative logistics solutions for emergencies, such as providing prompt delivery to meet unexpected merchandise shortages for customers.

On the other hand, some attributes have good performance but are insignificant. These attributes correspond to providing customer requests, convenience, and service procedures, and also the appearance of the employees always friendly and kind to customers.

Of course, this study has some limitations that need to be addressed in the future. The findings of this study are not necessarily representative of customer views about delivery service providers in other countries or regions because the respondents were asked about delivery services in the biggest city in the east part of Indonesia. As a result, more research on this topic is required to explore the variables that may influence rating on their perception of customer satisfaction

related to the COVID-19 pandemic. Further research can be conducted on the development and enrichment of the method to gain a more powerful result. Chen et al. (2018) proposed combining the benefits of IPA, the ZOT idea, and the KANO model[30]. During the COVID-19 pandemic, the research can also examine the aspects influencing supply chain activities and delivery service decisions to improve customer satisfaction and experience.

CONCLUSION

Based on the results of measurements using the SERVQUAL method, it can be concluded that we obtained the difference or value gap between perceptions and expectations on 23 attributes of delivery services that produce negative values on all attributes. However, it should be noted that the most negative scores are in the scale range between satisfied and very satisfied.

The findings of the overall evaluation of the consumer satisfaction index confirmed this circumstance, which reveals that the level of satisfaction on the CSI and HCSI indices is on the borderline between satisfied and very satisfied. Still, HCSI gives confidence in the analysis, especially emphasizing satisfaction indicators that can accommodate the heterogeneity of dynamic consumer behavior for enhancing service quality. The index facilitates the detection of customer satisfaction/dissatisfaction sources and the formulation of plans for enhancing service quality. HCSI integrates heterogeneity into user evaluations by adjusting importance and satisfaction ratings based on deviation from the mean value. Implementing adjustments offers greater weight to attributes defined by

homogenous user evaluations and less weight to the trait that is more heterogeneous. Based on the experimental findings, HCSI can be a valuable tool for measuring dynamic service quality for future research to evaluate delivery services performance and satisfy consumer needs.

Furthermore, combining the SERVQUAL method with the Importance Performance Analysis (IPA) method generates five service attributes in quadrant I (priority), seven service attributes in quadrant II (keep up the good work), six service attributes in quadrant III (low priority), and five service attributes in quadrant IV (possible overkill).

According to the findings, customers favor hard qualities of service quality, such as responsiveness, reliability, and empathy, when ranking delivery services. Besides, customer ratings consider the traits emphasized in a good performance that must be maintained.

Finally, management contributions, such as the effectiveness of assessment systems and their limitations, are explored in addition to theoretical contributions.

Acknowledgment:

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Supplementary table:

Attribute	Satisfaction Mean(SD)	Importance Mean(SD)	Corrected Importance	Weighted Score Corrected Importance (W_k^c)	Corrected Satisfaction	Weighted Corrected Satisfaction	Mean Corrected Satisfaction (S_k^c)	$W_k^c * S_k^c$
T1	4.14(0.70)	4.51(0.74)	6.09	0.05	5.91	0.05	4.90	0.23
T2	4.10(0.85)	4.35(0.80)	5.44	0.04	4.82	0.04	3.95	0.16
T3	3.80(0.88)	4.40(0.82)	5.37	0.04	4.32	0.04	3.28	0.13
T4	4.18(0.85)	4.56(0.80)	5.70	0.04	4.92	0.04	4.11	0.18
R1	3.99(0.93)	4.43(0.82)	5.40	0.04	4.29	0.04	3.42	0.14
R2	3.67(0.95)	4.44(0.83)	5.35	0.04	3.86	0.03	2.83	0.12
R3	4.01(0.62)	4.48(0.79)	5.67	0.04	6.47	0.06	5.19	0.22
R4	4.07(0.80)	4.45(0.86)	5.17	0.04	5.09	0.04	4.14	0.16
R5	4.03(0.68)	4.51(0.80)	5.64	0.04	5.93	0.05	4.78	0.20
R6	3.91(0.81)	4.40(0.85)	5.18	0.04	4.83	0.04	3.77	0.15
R7	3.82(0.76)	4.40(0.73)	6.03	0.05	5.03	0.04	3.84	0.18
R8	4.06(0.78)	4.49(0.80)	5.61	0.04	5.21	0.05	4.23	0.18
RS1	3.84(0.85)	4.40(0.88)	5.00	0.04	4.52	0.04	3.47	0.13
RS2	3.98(0.78)	4.51(0.69)	6.54	0.05	5.10	0.04	4.06	0.20
RS3	3.92(0.88)	4.53(0.79)	5.73	0.04	4.45	0.04	3.49	0.15
RS4	3.90(0.84)	4.52(0.79)	5.72	0.04	4.64	0.04	3.62	0.16
A1	3.98(0.82)	4.59(0.74)	6.20	0.05	4.85	0.04	3.86	0.18
A2	4.05(0.79)	4.50(0.79)	5.70	0.04	5.13	0.04	4.15	0.18
A3	3.98(0.78)	4.48(0.86)	5.21	0.04	5.10	0.04	4.06	0.16
E1	3.95(0.75)	4.54(0.79)	5.75	0.04	5.27	0.05	4.16	0.18
E2	4.18(0.78)	4.64(0.71)	6.54	0.05	5.36	0.05	4.48	0.22
E3	4.09(0.78)	4.61(0.76)	6.07	0.05	5.24	0.05	4.29	0.20
E4	4.09(0.87)	4.63(0.70)	6.61	0.05	4.70	0.04	3.84	0.19
Sum			131.71	1.00	115.04	1.00	91.92	4.01
Heterogeneus Customer Satisfaction Index (HCSI)								80.19

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