International Journal of Psychosocial Rehabilitation, Vol. 24, Issue 7, 2020
ISSN: 1475-7192

Analysis Of Customer Satisfaction To Quality Of Service Using Customer Satisfaction Index (CSI), Importance Performance Analysis (IPA) And Potential Gain In Customer Values (PGCV)

[1]Lidia Dwi Utami[1], Ibnu Widiasa Putra[2], Reza Nurrochman[3] ,Azhar Fatahilah[4], Yani Iriani, Dra., M.T. [5]

. *Abstract*. *X is a logistic courier & financial accounting service company. A metric to measure their customer satisfaction need to be identified to maintain their customer loyalty in a satisfactory level. Based on data acquired during the research, there were some major declining order (-26%) from customer between July 2019 - September 2019 from 617.602 to 454.045 orders. The objective of this research is to analyze PT. X quality of service level by using Customer Satisfaction Index (CSI) methods and Importance Performance Analysis (IPA). In addition, by using Potential Gain in Customer Value (PGCV) methods, improvement suggestion shall be determined. The result on quality of service level based on research conducted in PT. X using Customer Satisfaction Index (CSI) methods is 61.49%, which is under "Quite Satisfied" category. Subsequently, the data was analyzed by using Importance Performance Analysis (IPA) methods resulting in some attributes in first quadrant need to be focused for improvement; such as safety guarantee of damaged or lost items, prioritizing customer interest, provide good service, delivery speed, on time delivery guarantee, and employee provide fast and appropriate service. Furthermore, attribute improvements were prioritized using Potential Gain in Customer Value (PGCV) methods. The result of this methods will help PT. X to better understand which attribute need to be addressed first to increase their customer loyalty. The result from most to least important attributes are; safety guarantee of damaged or lost items, prioritizing customer interest, provide good service, delivery speed, on time delivery guarantee, tracking shipment, employee provide fast and appropriate service, employee trustworthiness, give a good response when customer raise a problem, competitive rates, employees behave friendly and polite, sufficient waiting room, provide solutions in term of delivery, cleanliness and proper service place, Ease payment and billing, and strategic location and easy to reach.*

Keywords: Customer Satisfaction, Customer Satisfaction Index (CSI), Importance Performance Analysis (IPA), Potential Gain in Customer Value (PGCV).

I. INTRODUCTION

Customer satisfaction is the most dominant issue for every service provider company; however, it is not an easy process to fulfill those customer satisfaction [1]. Some of the advantages of the high level of customer satisfaction are; creating customer loyalty, avoiding customer turnover, to reduce customer sensitivity towards pricing, to reduce cost of marketing failure, and to reduce operational cost [2].

[1] 1,2,3,4,5Industrial Engineering Departement, Faculty of Engineering Widyatama University, Bandung Indonesia
*Corresponding Author: lidia.dwi@widyatama.ac.id, ibnu.putra@widyatama.ac.id, reza.nurrochman@widyatama.ac.id, azhar.fatahilah@widyatama.ac.id, yani.iriani@widyatama.ac.id

Many factors take effect on satisfactory level, such as quality of service. Quality of service is one of the most important factors for customers consideration to determine satisfaction level in overall. Image of good service is not based on service provider point of view, but based on customer perception of customer point of view [3].

Measurement of customer satisfaction could be conducted using *Importance Performance Analysis* (IPA) methods. IPA is a simple yet effective methods which could be applied to measure someone feeling after comparing level of performance or result received with his expectation [4]. The IPA measurement result then carried forward to measure overall customer satisfaction using Customer Satisfaction Index (CSI) methods. CSI is a customers pleased or disappointed feeling which generated by comparing if the performance they feel after using certain product is align with their expectation [5]. According to [3] Customer satisfaction index (CSI) is utilized to understand service user overall customer satisfaction level by apprehending level performance and level of interest or expectation from services attributes. After the measurement of satisfaction level conducted, analysis of each attribute shall follow to evaluate the improvement needed using Potential Gain in Customer Value (PGCV) methods. PGCV is a complement from IPA methods which able to compare the result of cartesian diagram in detail [14].

PT. X is a logistic courier & financial accounting service company which expected to provide good and satisfactory service to their customer. The issue found by authors during the research is there were some major declining order (-26%) from customer between July 2019 - September 2019 from 617.602 to 454.045 orders.

The objective of this research is to analyze PT. X quality of service level by using Customer Satisfaction Index (CSI) methods and Importance Performance Analysis (IPA). In addition, by using Potential Gain in Customer Value (PGCV) methods, improvement suggestion shall be determined. Customer Satisfaction Index (CSI) methods is utilized to measure customer satisfaction level towards usage of service provided. Importance Performance Analysis (IPA) is utilized to identify each attribute level of interest, service, and to understand improvement priority that need to be done by service provider in this research. Potential Gain in Customer Value (PGCV) methods is utilized for evaluation measurement and suggestion to PT.X to improve their service quality.

This research is a expansion from previous research authored by Risep dan Niluh (2018) [16] titled "Analisa kepuasan pelanggan dengan menggunakan metode Customer Satisfaction Index (CSI) dan metode Importance Performance Analysis (IPA)". The research is intended to understand customer satisfaction level in OIS Photography and determine criteria in the service priority. In their research, customer satisfaction level to OIS photography according to Customer Satisfaction Index (CSI) methods is 74.19% and based on Importance Performance Analysis (IPA) methods there are 3 attributes in quadrant A and entitled to be improvement area attributes. Whereas in this study was expanded by adding Potential Gain in Customer Value (PGCV) methods to determine company improvement priority in detail as a suggestion to PT. X to improve their quality of service level.

II. LITERATURE REVIEW

2.1. Importance Performance Analysis (IPA)

Importance Performance Analysis (IPA) is a prioritization tools which is first introduced by Martilla and James on 1978 in automotive context. Even though in the beginning IPA was being used in the product configuration and often applied to determine solution in the service improvement such as health [6] or tourism, and overall objective of their product [7].

Importance Performance Analysis (IPA) is important to conduct research in an effort to improve real customer experience.

IPA has to be covers certain level of relevance and determinants, and also has to be distinguished between direct action and indirect action because both are having different values of importance. Direct and indirect action provide different implications and interpretations, for example; direct assessment using a measure of relevance will identify important attributes during the phase of customer's choice, while using determination for attributes is important during the consumption phase [8]. The determination of attributes is influenced by the level of performance of other attributes that are being studied for example such as the product / service / purpose must be considered as a whole [9].

The first stage in this method is to determine the level of concordance between the level of importance and the level of performance from the studied attributes by comparing performance scores and importance scores. The formula used is [10] :

$$Tk_i = \frac{X_i}{Y_i} \; x \; 100\% \qquad (1)$$

Where:

Tk_i = level of concordance

X_i = performance scores

Y_i = importance scores

The second step is to calculate the average for each attribute using the formula:

$$\overline{X_i} = \frac{\sum \overline{X_i}}{n} \qquad \overline{Y_i} = \frac{\sum \overline{Y_i}}{n} \qquad (2)$$

Where:

$\overline{X_i}$ = Average of performance scores

$\overline{Y_i}$ = Average of importance scores

n = Number of respondents

Next step is to calculate the average of all importance (Y) and performance (X) attributes which is the limits in the Cartesian diagram, using the formula:

$$\overline{\overline{X}} = \frac{\sum \overline{X_i}}{k} \qquad \overline{\overline{Y}} = \frac{\sum \overline{Y_i}}{k} \qquad (3)$$

Where:

$\overline{\overline{X}}$ = Average of all factors or attributes performance scores

$\overline{\overline{Y}}$ = Average of all factors or attributes importance scores which affect customer satisfaction

K = Number of attributes which could affect customer satisfaction

The final stage is the elaboration of each attribute in the Cartesian diagram as shown in Figure 1.

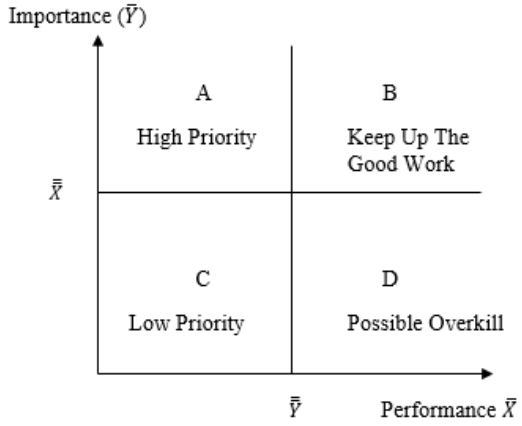

Figure 1. Cartesian Diagram

2.2. Customer Satisfaction Index (CSI)

Customer Satisfaction Index (CSI) is an index to determine the level of overall customer satisfaction with an approach that considers the importance of the measured attributes of the product or service. CSI provides clear data about the level of customer satisfaction so that at a certain time frame periodic evaluations can be conducted to improve what is lacking and improve the service that is valued by customers as an added value [12].

The calculation stages of this method are:

1. Change the average value at the importance level to a percent in order to produce a 100% total Weighting Factor
2. The average value of the performance level is multiplied by the Weighting Factor to get the Weighting Score
3. Weighted Scores of all attributes are summed to get a Weighted Total
4. Total Weighted divided by the maximum scale used, then multiplied by 100% to get a Satisfaction Index value [12].

Tabel 1 Index Value

No	Index Value (%)	Remark
1	81-100	Very satisfied

2	66-80,99	Satisfied
3	51-65,99	Quite Satisfied
4	35-50,99	Less satisfied
5	0-34,99	Not satisfied

The maximum value of CSI is 100%. A CSI value of 50% or lower indicates poor service performance. A CSI value of 80% or higher indicates that the user is satisfied with the service performance [11].

2.3. Potential Gain in Customer Values (PGCV) CSI)

PCGV is a tool used to determine priority improvements, so this tool is important for completing an analysis of a performance. Steps to calculate the PGCV Index shown below:

1. Calculate the Achieved Customer Value (ACV)

$$ACV = I \times P \quad (4)$$

Where:
ACV = Value of consumer achievement
I = Average value for expectations
P = Average value for performance

2. Calculate the Ultimate Desired Customer Value (UDCV)

$$UDCV = I \times Ps \quad (5)$$

Where:
UDCV = The final value of consumer desires
I = Average value for expectations
Ps =The maximum performance value in the selected Likert Scale

3. Index PGCV

$$PGCV = UDCV - ACV \quad (6)$$

The first priority is the attribute that has the largest PGCV index value, so improvements must be conducted first, and so on [15] .

III. RESULT AND DISCUSION

In taking the sample the researcher used a random sample technique that did not distinguish every subject in the population. If the population is under 100, 50% or all of it can be taken. If more than 100 can be taken 15% or more [17]. So, researchers took 50% of the population of regular customers express services at PT. X, amounting to 74 people and respondents taken by researchers as many as 34 respondents. After the sample is obtained, the researcher distributes a questionnaire containing questions about the quality of PT.X services to be assessed by respondents, following the attributes on the distributed questionnaires:

Tabel 2 Scoring Attributes

Number	Attribute
x1	Employees behave friendly and polite
x2	Competitive rates
x3	Delivery speed
x4	Tracking shipment
x5	Ease payment and billing
x6	Employee provide fast and appropriate service
x7	Prioritizing customer interest
x8	Provide solutions in term of delivery
x9	Give a good response when customer raise a problem
x10	On time delivery guarantee
x11	Safety guarantee of damaged or lost items
x12	Employees trustworthiness
x13	Strategic location and easy to reach
x14	Cleanliness and proper service place

x15	Sufficient waiting room
x16	Provide good service

3.1 Validity Test

Before the questionnaire's results are processed it is necessary to do a validity test to determine an instrument's ability to express what is the measurement's target. The method used for this validity test is with Pearson's product moment. The calculation results are expressed with Pearson correlation, if the attribute is invalid then it cannot be included again in the next test [13].

This validity test was carried out with 37 samples with the following results:

Tabel 3 Validity Test Result

No	*r table*	Performance		Importance	
		r count	result	r count	result
x1	0.325	0.333	Valid	0.405	Valid
x2	0.325	0.392	Valid	0.343	Valid
x3	0.325	0.458	Valid	0.570	Valid
x4	0.325	0.341	Valid	0.446	Valid
x5	0.325	0.372	Valid	0.401	Valid
x6	0.325	0.561	Valid	0.557	Valid
x7	0.325	0.383	Valid	0.542	Valid
x8	0.325	0.375	Valid	0.428	Valid
x9	0.325	0.368	Valid	0.553	Valid
x10	0.325	0.477	Valid	0.342	Valid
x11	0.325	0.448	Valid	0.664	Valid
x12	0.325	0.346	Valid	0.488	Valid
x13	0.325	0.376	Valid	0.454	Valid
x14	0.325	0.384	Valid	0.411	Valid

x15	0.325	0.476	Valid	0.349	Valid
x16	0.325	0.485	Valid	0.412	Valid

Based on the above table, all attributes are identified as valid and can be analyzed further.

3.2 Reliability Test

A valid attribute is then proceed with a reliability test in order to determine the consistency of the measurement results [13]. The method used in this test is Cronbach Alpha with the following test results:

Tabel 4 Reliability test result

Variable	*r table*	*Cronbach's Alpha*	Result
Importance	0.497	0.743	Reliable
Performance	0.497	0.674	Reliable

Based on the above calculation result table, it can be stated that all the attributes of the questionnaire are reliable. The stability of the observations if measured by these attributes can be seen, in other words the results will not deviate too far from the average respondent's answers so that further analysis can be done

3.3 Importance Performance Analysis (IPA)

Questionnaire data that has been tested for validity and reliability test is then performed another analysis using the IPA method. This is done by calculating the total score of performance and importance, and then calculating the average value of the performance score and the average score of importance which is further mapped in the Cartesian diagram. The Cartesian diagram has four parts of the assessment of improvement, that are; quadrant I is a priority in improvement, quadrant II maintains quality, quadrant III is a low-priority priority, quadrant IV does not have to make improvements.

A. Level of concordance

Measuring the level of concordance is done to provide an overview of service performance PT.X by determine percentage of the total score performance against interest.

Tabel 5 Level of concordance

Scoring Criteria			
0,81	-	1	Very good
0,66	-	0,8	Good
0,51	-	0,65	Fair

0,35	-	0,5	Poor
0	-	0,34	Very poor

Tabel 6 Calculation Result of Concordance Level

No	Performance (Xi)	Importance (Yi)	Concordance Level (Ki)
x1	119	163	73.01%
x2	116	160	72.50%
x3	107	165	64.85%
x4	105	157	66.88%
x5	124	161	77.02%
x6	110	167	65.87%
x7	105	166	63.25%
x8	116	168	69.05%
x9	123	164	75.00%
x10	107	165	64.85%
x11	103	168	61.31%
x12	112	160	70.00%
x13	123	155	79.35%
x14	124	164	75.61%
x15	121	165	73.33%
x16	106	167	63.47%
Total	**1821**	**2615**	**69.64%**

Based on table 6, the performance of PT. X services is 69.64%, which means it is included in the good criteria.

Cartesian Diagram

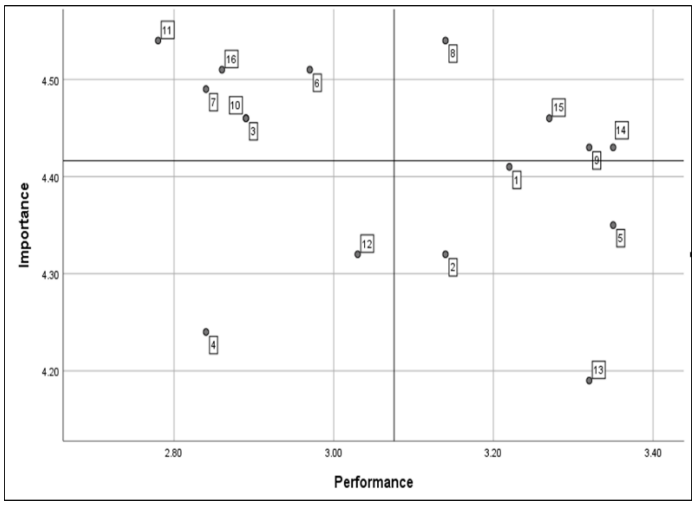

Figure 2. Cartesian Diagram Result

Based on Figure 2, the attributes obtained at:

- Quadran I = x11 (Safety guarantee of damaged or lost items), x7 (Prioritizing customer interest), x16 (Provide good service), x3 (Delivery speed), x10 (On time delivery guarantee), x6 (Employee provide fast and appropriate service).
- Quadran II = x8 (Provide solutions in term of delivery), x15 (Sufficient waiting room), x9 (Give a good response when customer raise a problem), x14 (Cleanliness and proper service place).
- Quadran III = x4 (Tracking shipment), x12 (Employees trustworthiness).
- Quadran IV = x2 (Competitive rates), x1 (Employees behave friendly and polite), x5 (Ease payment and billing), x13 (Strategic location and easy to reach).

3.4 Customer Satisfaction Index (CSI)

After testing by the method of science, further testing is using CSI methods for determining the level of customer satisfaction with the quality of service PT. X

Tabel 7 CSI methods calculation

No	Importance Level (MIS)	Weight Factors (WF) %
x1	4.41	6.23%
x2	4.32	6.12%
x3	4.46	6.31%
x4	4.24	6.00%
x5	4.35	6.16%
x6	4.51	6.39%
x7	4.49	6.35%

x8	4.54	6.42%
x9	4.43	6.27%
x10	4.46	6.31%
x11	4.54	6.42%
x12	4.32	6.12%
x13	4.19	5.93%
x14	4.43	6.27%
x15	4.46	6.31%
x16	4.51	6.39%
Total	**70.68**	**100%**

Tabel 8 CSI methods calculation (cont.)

No	Performance Level (MSS)	Weight Factors (WF) %	Weight Score (WS)
x1	3.22	6.23%	0.20
x2	3.14	6.12%	0.19
x3	2.89	6.31%	0.18
x4	2.84	6.00%	0.17
x5	3.35	6.16%	0.21
x6	2.97	6.39%	0.19
x7	2.84	6.35%	0.18
x8	3.14	6.42%	0.20
x9	3.32	6.27%	0.21
x10	2.89	6.31%	0.18
x11	2.78	6.42%	0.18
x12	3.03	6.12%	0.19
x13	3.32	5.93%	0.20

x14	3.35	6.27%	0.21
x15	3.27	6.31%	0.21
x16	2.86	6.39%	0.18
Total	**49.22**	**100%**	**3.07**

Based on table 8, the performance of PT. X services calculated using Customer Satisfaction Index (CSI) is 61.49%, obtained from the weight score divided by the maximum scale used (which is 5) then multiplied by 100%. The conclusion is performance of PT.X service is included in quite good criteria

3.2 Potential Gain in Customer Values (PGCV)

To help the IPA and CSI methods in the improvement of attributes, the researchers used the PGCV method so that the attributes that have the potential to be corrected first can be identified, namely those that have a PGCV index value above the average. Following are the results of calculations with the PGCV method:

Tabel 9 PGCV Calculation

No	Average Value		ACV (P x I)	PS	UDCV	PGCV	Priority
	Performance (P)	Importance (I)					
x1	3.2	4.4	14.2	5	22.0	7.9	11
x2	3.1	4.3	13.6	5	21.6	8.1	10
x3	2.9	4.5	12.9	5	22.3	9.4	4
x4	2.8	4.2	12.0	5	21.2	9.2	6
x5	3.4	4.4	14.6	5	21.8	7.2	15
x6	3.0	4.5	13.4	5	22.6	9.1	7
x7	2.8	4.5	12.7	5	22.4	9.7	2
x8	3.1	4.5	14.2	5	22.7	8.5	9
x9	3.3	4.4	14.7	5	22.2	7.4	13
x10	2.9	4.5	12.9	5	22.3	9.4	4
x11	2.8	4.5	12.6	5	22.7	10.1	1
x12	3.0	4.3	13.1	5	21.6	8.5	8

x13	3.3	4.2	13.9	5	20.9	7.0	16
x14	3.4	4.4	14.9	5	22.2	7.3	14
x15	3.3	4.5	14.6	5	22.3	7.7	12
x16	2.9	4.5	12.9	5	22.6	9.6	3
Total	**49.2**	**70.7**	**217.3**				

Tabel 10 PGCV Calculation Conclusion

Priority	Attribute
1	x11
2	x7
3	x16
4	x3
5	x10
6	x4
7	x6
8	x12
9	x8
10	x2
11	x1
12	x15
13	x9
14	x14
15	x5
16	x13

Based on table 10, priority order improvement attributes are obtained; x11 (Safety guarantee of damaged or lost items), x7 (Prioritizing customer interest), x16 (Provide good service), x3 (Delivery speed), x10 (On time delivery guarantee), x4 (Tracking shipment), x6 (Employee provide fast and appropriate service), x12 (Employees trustworthiness), x8 (Provide

solutions in term of delivery), x2 (Competitive rates), x1 (Employees behave friendly and polite), x15 (Sufficient waiting room), x9 (Give a good response when customer raise a problem), x14 (Cleanliness and proper service place), x5 (Ease payment and billing), x13 (Strategic location and easy to reach).

So from the above description, the similarities of improvement priority attribute that refers to the first quadrant in the Cartesian diagram clearly visible. These attributes should immediately be improved to maintain customer loyalty in PT. X.

4. Conclusion

1. Based on the research result, the level of service quality from PT.X analyzed using the Customer Satisfaction Index (CSI) method resulting a value of 61.49%, which means it is included in the "quite good" criteria.
2. In the Importance Performance Analysis (IPA) method, there are several attributes in quadrant 1 that must be focused on improvement which is safety guarantee of damaged or lost items, prioritizing customer interest, provide good service, delivery speed, on time delivery guarantee, employee provide fast and appropriate service.
3. The priority order for attribute improvement obtained from the test results using the Potential Gain in Customer Value (PGCV) method, are:

- Safety guarantee of damaged or lost items,
- prioritizing customer interest,
- provide good service,
- delivery speed,
- on time delivery guarantee,
- tracking shipment,
- employee provide fast and appropriate service,
- employee's trustworthiness,
- provide solutions in term of delivery,
- competitive rates,
- employees behave friendly and polite,
- sufficient waiting room,
- give a good response when customer raise a problem,
- cleanliness and proper service place,
- ease payment and billing,
- strategic location and easy to reach.

4. References

[1] R. K. Umam, N. P. Hariastuti, I. Teknologi, and A. Tama, "Analisa Kepuasan Pelanggan Dengan Menggunakan Metode Customer Satisfaction Index (CSI) Dan Importance Performance Analysis (IPA)," Seminar. Naional. Sains dan Teknol. Terapan. VI , Institut. Teknologi. Adhi Tama Surabaya, pp. 339–344, 2018.

[2] D. W. I. Aryani, "Pengaruh Kualitas Layanan terhadap Kepuasan Pelanggan dalam Membentuk Loyalitas Pelanggan," Bisnis Birokrasi, J. Ilmu Adm. dan Organ., vol. 17, pp. 114–126, 2010.

[3] V. Devani et al., "Metode Customer Satisfaction Index (CSI) DAN Potential Gain In Customer Value (PGCV)," Bisnis Birokrasi, J. Ilmu Adm. dan Organ., vol. 2, no. 2, pp. 24–29, 2016.

[4] Y. Chen and S. Lin, "Applying Importance-Performance Analysis for Improving Internal Marketing of Hospital Management in Taiwan," Int. Bus., vol. 6, no. 4, pp. 45–54, 2013.

[5] K. Ilieska, "Customer Satisfaction Index – as a Base for Strategic Marketing Management," TEM J., vol. 2, no. 4, pp. 327–331, 2013.

[6] Aeyels, D., Seys, D., Sinnaeve, P. R., Claeys, M. J., Gevaert, S., Schoors, D., ... & Vanhaecht, K. 2018. Managing in-hospital quality improvement: An importance-performance analysis to set priorities for ST-elevation myocardial infarction care. European Journal of Cardiovascular Nursing, 17(6), 535-542. DOI: 10.1177/1474515118759065

[7] Jeng, C. R., Snyder, A. T., & Chen, C. F. 2019. Importance–performance analysis as a strategic tool for tourism marketers: The case of Taiwan's Destination Image. Tourism and Hospitality Research, 19(1), 112-125. DOI: 10.1177/1467358417704884

[8] Mikulić, J., & Prebežac, D. 2011. Rethinking the importance grid as a research tool for quality managers. Total Quality Management & Business Excellence, 22(9), 993-1006. DOI: 10.1080/14783363.2011.593857

[9] Mikulić, J., & Prebežac, D. 2012. Accounting for dynamics in attributeimportance and for competitor performance to enhance reliability of BPNNbased importance–performance analysis. Expert Systems with Applications, 39(5), 5144-5153. DOI: 10.1016/j.eswa.2011.11.026

[10] Santoso. 2011. Persepsi Konsumen Terhadap Kualitas Bakpao Telo Dengan Metode Importance Performance Analysis (IPA). Jurnal Teknologi Pertanian. 12 (1) : 9.

[11] Bhote, K.R., 1996, Beyond Customer Satisfaction to Customer Loyality: The Key to Great Profitability. New York: AMA Membership Publications Division, American Management Association.

[12] Amran, T dan Ekadeputra, P. 2010. Pengukuran Kepuasan Pelanggan Menggunakan Metode Kano Dan Root Cause Analysis (Studi Kasus PLN Tangerang). Jurnal Teknik Industri. 1 (2) : 164.

[13] Sugiyono, 2010, Metode penelitian: Kuantitatif Kualitatif & RND, Alfabeta, Bandung.

[14] Darmawan, A., Mulyadi, & Busri, N.K. 2014. Analisis Kepuasan Pelanggan Terhadap Layanan Purna Jual Avanza dengan Metode SERVQUAL dan PGCV. Jurnal Teknik Industri Universitas Hassanudin, Vol. 2(2), 12-19

[15] Rosyidah, H , Wuryandari, T, & Rusgiyono, A, 2015. Analisis Kualitas Pelayanan Dengan Menggunakan Fuzzy Servqual, Kuadran IPA, dan Indeks PGCV. Jurnal Gaussian, Volume 4, Nomor 4. pp 885 – 894

[16] Risep K, U dan Niluh P, H. 2018. Analisa kepuasan pelanggan dengan menggunakan metode Customer Satisfaction Index (CSI) dan metode Importance Performance Analisys (IPA). Jurnal Institut Teknologi Adhi Tama Surabaya

[17] Arikunto, Suharsimi. 2010. Prosedur Penelitian Suatu Pendekatan Praktik. Jakarta: Rineka Cipta