Journal of Industrial Engineering, Scientific Journal on Research and Application of Industrial System, Vol. 2, No.1, Maret 2017: 1-9

A Combination of Importance and Performance Analysis and Potential Gain in Customer Value for Determining Service Attributes Priority Level for PT. X

Hartono Mulyo Raharjo[1], Hery Hamdi Azwir[2]
[1,2] Industrial Engineering Department, Faculty of Engineering, President University
Jl. Ki Hajar Dewantara
Kota Jababeka,Cikarang, Bekasi - Indonesia 17550
Email: [1]rainhart_mulyo@yahoo.co.id, [2]hery.azwir@president.ac.id

Abstract

As aviation systems across the globe always improving, every aspect in air transport must be in its best condition to support a smooth performance of flight; including ground handling services in airports. Ground handling service is a management system whilst an aircraft is on the ground or during the landing period. The management system is including aircraft maintenance, passenger management, safety and security maintenance, departure control, etc. Soekarno-Hatta International Airport as Indonesia gate to the world is demanded to have best service provided in this airport. PT.X as ground handling service company in the airport receives several complaint from its customers as the company still under development. The company needs to fix this by analyzing the aspects that can affect their customers' satisfaction. The problem is able to be solved by using Importance and Performance Analysis (IPA) and Potential Gain in Customer Value (PGCV) methods. A combination between these two methods is able to generate an improvement priority ranking that able to use by the company to improve their service performance in accordance with the most potentially give its customer the most satisfaction. There are total of 13 performance of service attributes that is undesirable by the customers. These 13 attributes are in both Main Priority and Low Priority quadrant that is produced by low Performance Level of services provided. Attributes that are located in Main Priority quadrant become the first priority prior to the Low Priority quadrant that will generate lower potential gain for the customers' satisfaction towards the company.

Keywords: Importance and Performance Analysis, Potential Gain in Customer Value, Cartesian Diagram, Ground Handling.

Abstrak

Setiap aspek dalam transportasi udara harus dalam kondisi terbaiknya untuk mendukung kelancaran kinerja penerbangan, termasuk layanan penanganan darat di bandara. Layanan penanganan di darat adalah sistem manajemen saat pesawat terbang berada di darat atau selama periode pendaratan. Sistem manajemen termasuk perawatan pesawat, manajemen penumpang, pemeliharaan keselamatan dan keamanan, pengendalian keberangkatan, dll. Bandara Internasional Soekarno-Hatta sebagai gerbang Indonesia ke dunia dituntut untuk selalu memberikan layanan terbaik. PT.X sebagai perusahaan layanan penanganan di darat di bandara menerima beberapa keluhan dari pelanggannya karena perusahaan memang masih dalam taraf pengembangan. Perusahaan perlu memperbaikinya dengan menganalisis aspek-aspek yang dapat memengaruhi kepuasan pelanggan mereka. Masalah ini dapat dipecahkan dengan menggunakan metode Importance and Performance Analysis (IPA) dan Potensial Gain in Customer Value (PGCV). Kombinasi diantara dua metode ini mampu menghasilkan peringkat prioritas perbaikan yang dapat digunakan oleh perusahaan untuk meningkatkan kinerja layanan mereka sesuai dengan yang paling berpotensi memberikan kepuasan paling besar kepada pelanggannya. Ada total 13 kinerja atribut layanan yang tidak diinginkan oleh pelanggan. Ke-13 atribut ini terletak di kuadran Utama Prioritas dan Prioritas Rendah yang dihasilkan oleh Tingkat Kinerja rendah yang disediakan. Atribut yang berada di kuadran Prioritas Utama menjadi prioritas pertama sebelum kuadran Prioritas Rendah yang akan menghasilkan potensi keuntungan yang lebih rendah untuk kepuasan pelanggan terhadap perusahaan.

Kata kunci: Importance and Performance Analysis, Potential Gain in Customer Value, Cartesian Diagram, Ground Handling.

1. Introduction

PT. X as the ground handling services provider insist on giving their best performances in order to be the best ground handling services provider in the world. This is a strong commitment for the company, which they try to fulfill their duty to the fullest. In order to be the best ground handling service provider, the service given by the company must meet their customers' requirements or specifications in order to satisfy the customers and receive a good feedback from its customers.

The service quality of ground handling in Jakarta should be satisfying in order to fulfill the customers' expectations of services. When the customers' expectations are fulfilled, it is expected that those customers will not use another competitor as their ground handling services. This is quite difficult to achieve, considering that the customers' of ground handling services are varies. Thus, the customers of ground handling service require different handling one by another

In 2014, PT. X has finished several contracts with its customers in ground handling services on Soekarno-Hatta airport. There are 16 airlines that are taking contracts with PT. X, however 3 foreign airlines are terminating the cooperation. Rather than extending the contract with PT.X, the customers are turning over to PT.Y; a competitor for PT.X in ground handling services. Those 3 foreign airlines are the most valuable customers for PT.X, as those airlines have lots of flight in the airport that handled by the company. This occurrence is an undesirable event for PT.X, thus the company decided to increase their service quality by improving their service performances to satisfy their customers to prevent customers turnover in the futures.

2. Methods

2.1 Customer Satisfaction

Customer satisfaction according to Barkelay and Saylor (1994) is focus on consumer-oriented management process, even declared that customer satisfaction is the quality. According to Kotler (1991), the customer satisfaction is the level of feelings someone after comparing the performance (or result) that is perceived by expectations. Thus, the level of satisfaction is a function of the difference between the performances felt with expectations. There are many benefits received by company with the achievement of high level of customer satisfaction. High level of customer satisfaction can increase customer loyalty and prevent customer turnover, reduce customer sensitivity on prices, reduce costs marketing failure, reduce costs operation caused by the increasing number of customers, improve the effectiveness of advertising, and improve business reputation (Fornell, 1992).

The main factor in the customer satisfaction is the customer perception on the services quality (Zeithamal and Bitner, 1996). Customer satisfaction is very depending on the perception and expectations of customer. A company needs knowing several factors affect the perceptions and expectations of customer.

Formulation of satisfaction and the comparison between expectation and reality as follows:

1. Expectation < Reality, then very satisfied
2. Expectation = Reality, then satisfied
3. Expectation > Reality, then unsatisfied

2.2 Service Quality (SERVQUAL)

There are two main factors that affecting service quality, those are expected services and perceived service (Parasuraman, et al. 1985). If perceived services in accordance with the expected services, then the quality is considered good and satisfying. If the serviced is surpass the customer's expectation, and then quality is considered ideal. Otherwise, if the perceived services are lower than the customer's expectation, then it is considered as bad quality. Therefore, the quality level is depending on the service provider ability to deliver the customers expectation consistently.

Quality should begin from customer's needs and end at customer's perceptions (Kotler, 1994). This means that quality is not seen from service provider point of view, but from customer's perceptions. Tools that used to measuring quality services is servqual, which the concept is: service quality= performance-expectation (Parasuraman, et al., 1985).

There are five service quality's dimensions seen from customer's perception. those are (Parasuraman, et al., 1988):

1. Reliability, which means service delivery according to agreement accurately and satisfying.
2. Responsiveness, which is employee availability to aid customers and providing services instantly.

3. Assurance, which is knowledge, skills, and ability in delivering services, safe from hazards, risk, doubt, and trustable.
4. Empathy, including easy interaction, good communication, give attention to customer's needs and desires.
5. Tangible, physical evidence that shown from physical facility, equipment used, material provider employee appearance and communication tools.

2.3 Validity Test

Validity Test show how a measuring tools is valid in measuring something that are being measured (Siregar, 2006). When a questionnaire is being used in collecting data, then the designed questionnaire must be able to measure the things being measured.

$$r = \frac{n(\sum x_{ij} y_{ij}) - (\sum x_{ij} \sum y_{ij})}{\sqrt{\left((n\sum {x^2}_{ij}) - (\sum x_{ij})^2\right)\left((n\sum {y^2}_{ij}) - (\sum y_{ij})^2\right)}} \quad (1)$$

r = Pearson correlation
n = respondent size
x_{ij} = question score j and respondent i
y_{ij} = total score for respondent i
Pearson Correlation ≥ R-table; valid
Pearson Correlation < R-table; invalid

2.4 Reliability Test

Reliability Test is a test to measure whether an assessment tool produces stable and consistent result. One of the methods to measure data reliability is Cronbach's Alpha (Siregar, 2006).
Cronbach Alpha is developed by Lee Cronbach in 1951 to generate a measure of the iternal consistency of a test or scale. Internal consistency is an extent to which al the items in a test measure the same concept or construct and hence it is necessary but not sufficient condition for measuring homogeneity or unidimnsionality in a sample of test items (Tavakol and Dennick, 2011).

$$\alpha = \frac{k\bar{r}}{1+(k-1)\bar{r}} \quad (2)$$

α = Crobanch's Alpha
k = Total question
$\bar{r}$ = Correlation average between variable

Alpha > 0.90 is desirable (Tavakol and Dennick, 2011)

2.5 Importance and Performance Analysis (IPA)

Importance Performance Analysis (IPA) is a technique that is easy to apply by regulating the attributes of the Importance Level and the level of implementation or the Performance Level itself, which is useful for the development of an effective marketing program (Ruhimat, 2008). According to Suryawan and Dharmayanti (2013), customer satisfaction is determined by the customer's perception on performance of products or services to meet customer expectations. Customers will be satisfied if their expectations are met or would be satisfied if their expectations are exceeded.

$$\mathrm{x}_i = \frac{\sum Customer\ Experience}{n} \quad (3)$$

$$y_i = \frac{\sum Customer\ Expectation}{n} \quad (4)$$

x_i = Performance Level
y_i = Importance Level
n = Sample size

Gap analysis works by analyzing the difference between Importance Level and Performance Level.

$$Gap = y_i - x_i \quad (5)$$

x_i = Performance Level
y_i = Importance Level

Gap < 0, then very satisfied
Gap = 0, then satisfied
Gap > 0, then unsatisfied

The Conformances Level formula used is:

$$\mathrm{CL}_i = \frac{\mathrm{x}_i}{\mathrm{y}_i} \mathrm{x}\, 100\% \quad (6)$$

CL_i = Degree of Conformance/Conformances Level
x_i = Performance Level
y_i = Importance Level

Cartesian Diagram is separated by two axis line that generated by the Importance and Performance Level, this line also called as the reference line. The formula to generating the line is:

$$\overline{\mathrm{XI}} = \frac{\sum \mathrm{x}_i}{n}, \overline{\mathrm{YI}} = \frac{\sum \mathrm{y}_i}{n} \quad (7)$$

$\overline{\mathrm{XI}}$= Average value of Performance Level
$\overline{\mathrm{YI}}$= Average value of Importance Level

The value of $(\mathrm{XI})^{-}$is used as the reference line in the X-axis as it is representing the value of Performance Level. The value of $(\mathrm{YI})^{-}$is used as the reference line in the Y-axis as it is representing the value of Importance Level. Then four quadrants will be generated by these two lines. Those attributes according to Silva and Fernandes (2012) are:

Quadrant I (Main Priority)
Concentrate here - High Importance, Low Performance: Require immediate attention for improvement and are major weaknesses

Quadrant II (Preserved)
Keep up with the good work - High Importance, High Performance: Indicate opportunities for achieving or maintaining competitive advantage and are major strengths

Quadrant III (Low Priority)
Low Priority - Low Importance, Low Performance: are minor weaknesses and do not require additional effort

Quadrant IV (Exaggerated)
Possible Overkill - Low Importance, High Performance: Indicate that business resources committed to these attributes would be overkill and should be deployed elsewhere.

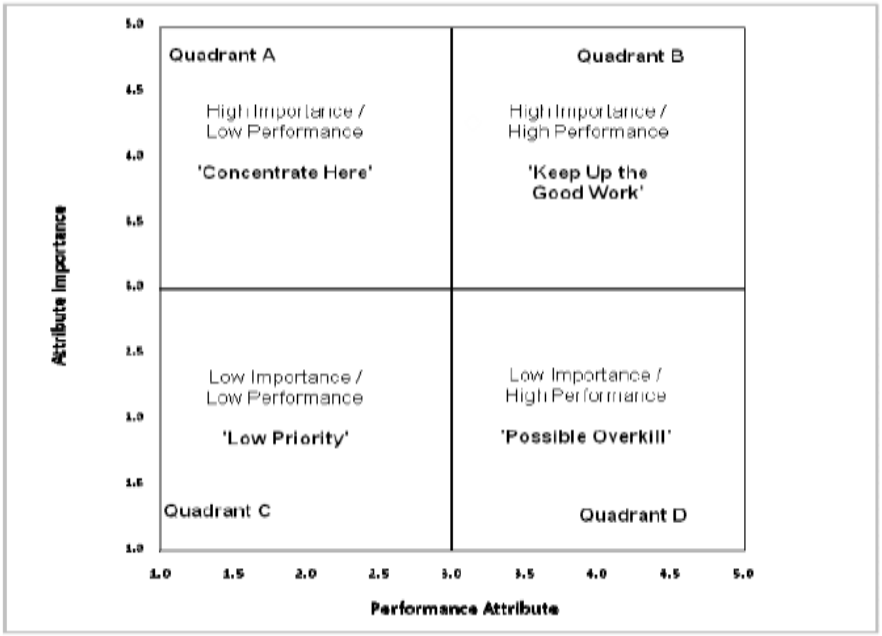

Figure 1. Quadrant for Cartesian Diagram in Importance and Performance Analysis

2.6 Potential Gain in Customer Value (PGCV)

This tool is used to complete the Importance Performance Analysis. This tool is used to determining the improvement priority that should be done by the producers. PGCV index is a method to analyze the customers (Linus et al., 2013). This method gives Importance Performance analysis an easier way to be compared in more quantitative detailed form.

The steps to calculate PGCV index are Dzunnurain and Eskatrimurti, 2012)::
1. Achieve Customer Value (ACV)
ACV shows the perceived value of customer's opinion. Finding ACV is by multiplying the value of the variable Importance with Performance variables.

$$ACV = Importance * Performance \quad (8)$$

2. Ultimately Desire Customer Value (UDCV)
UDCV is a final value that customer need. Looking for value UDCV is by multiplying the value of Importance value of maximum Performance in the Likert scale questionnaire distributed.

$$UDCV = Importance * Max.Importace \quad (9)$$

3. PGCV Index
The highest value from PGCV index becomes the first priority for improvement. Then the second and so forth consecutively become the next priority. PGCV index value is reduction of UDCV with ACV.

$$PGCV = UDCV - ACV \quad (10)$$

4. Result Analysis
In this step, Importance and Performance Analysis result determines and analyze factors that causing dissatisfaction. The method analyze factor that become the improvement priority by establishing the Importance and Performance Level. Potential Gain in Customer Value is used to rank the improvement priority that had been established by IPA method by determining the Achieve Customer Value and Ultimately Desire Customer Value. The PGCV index is achieved from the reduction of UDCV to ACV. The index is the potential satisfaction given by a specific attribute.

3 Result and Discussion

The questionnaire in this research is based on the 35th ed. IATA Ground Handling Manual. There are 25 service attributes that are going to be asked regarding the services of PT. X in Terminal area and General. Likert Scale (1-5) is used to answer the question with the score 1 is the lowest and 5 the highest.

3.1 IPA Analysis

Using IPA method, the service attributes are placed into four different quadrants based on their importance and performance levels. The conformances level and gap between the importance and performance in Importance and Performance Analysis method are the supporting method to help in analyzing the attributes.

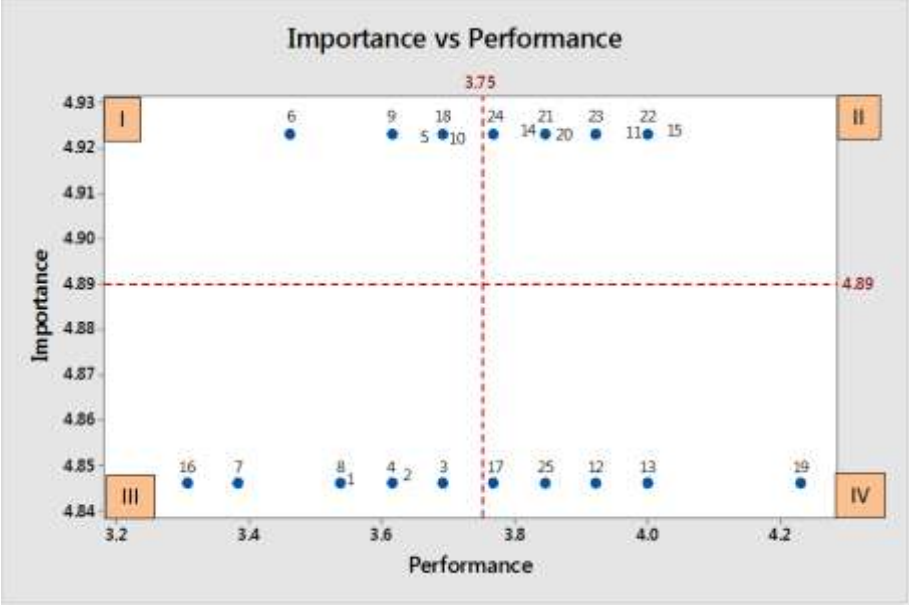

Figure 2. Importance and Performance Analysis Cartesian Diagram

3.2 PGCV Analysis

PGCV Index can be described as the priority level of service improvement. It shows the difference between the customers' expectations towards the service quality and the perceived service quality by the customers. Therefore, the highest the index value the most urgent it is need to be improved. To find the index value for every given service attributes, both ACV and UDCV values can be used in determining the index value.

Table 1. Potential Gain in Customer Value Index

No	Service Attribute	ACV	UDCV	PGCV
1	Passenger document handling	17.15	24.23	7.083
2	Baggage profiling	17.52	24.23	6.710
3	Boarding pass profiling	17.89	24.23	6.337
4	Special/irregularities handling	17.52	24.23	6.710
5	Special baggage handling	18.18	24.62	6.438
6	Check in counter procedure compliance	17.04	24.62	7.574
7	Boarding gate management procedure compliance	16.40	24.23	7.828
8	Check in staff's competencies	17.15	24.23	7.083
9	Boarding gate staffs competencies	17.80	24.62	6.817
10	Terminal safety and security	18.18	24.62	6.438
11	Check in counter table conditions	19.69	24.62	4.923
12	FIDS availability	19.01	24.23	5.219
13	Boarding gate table conditions	19.38	24.23	4.846
14	Baggage test unit conditions	18.93	24.62	5.680
15	Boarding gate waiting seats conditions	19.69	24.62	4.923
16	Office being communicative	16.03	24.23	8.201
17	Delay information	18.27	24.23	5.964
18	Check in marshal initiative to help	18.18	24.62	6.438
19	Information center staffs initiative to help	20.50	24.23	3.728
20	Priority boarding assistance	18.93	24.62	5.680
21	Prompt response to complain handling	18.93	24.62	5.680
22	Prompt response of check in marshal	19.69	24.62	4.923
23	Prompt response of information center staffs	19.31	24.62	5.302
24	Prompt response of special handling	18.56	24.62	6.059
25	Prompt response of mishandled baggage	18.64	24.23	5.592
Average		18.34	24.43	6.09

3.2 Analysis Summary

Cartesian quadrant and PGCV index of both IPA and PGCV methods are used in the combinations to determine the improvement priority ranking based on the potential customer satisfaction value.

Table 2. Analysis Summary

No	Service Attribute	PGCV	Quadrant
1	Passenger document handling	7.083	3
2	Baggage profiling	6.710	3
3	Boarding pass profiling	6.337	3
4	Special/irregularities handling	6.710	3
5	Special baggage handling	6.438	1
6	Check in counter procedure compliance	7.574	1
7	Boarding gate management procedure compliance	7.828	3
8	Check in staffs competencies	7.083	3
9	Boarding gate staffs competencies	6.817	1
10	Terminal safety and security	6.438	1
11	Check in counter table conditions	4.923	2
12	FIDS availability	5.219	4
13	Boarding gate table conditions	4.846	4
14	Baggage test unit conditions	5.680	2
15	Boarding gate waiting seats conditions	4.923	2
16	Office being communicative	8.201	3
17	Delay information	5.964	4
18	Check in marshal initiative to help	6.438	1
19	Information center staffs initiative to help	3.728	4
20	Priority boarding assistance	5.680	2
21	Prompt response to complain handling	5.680	2
22	Prompt response of check in marshal	4.923	2
23	Prompt response of information center staffs	5.302	2
24	Prompt response of special handling	6.059	2
25	Prompt response of mishandled baggage	5.592	4

Using both IPA and PGCV methods, the attributes will be ranked based on the most potential value towards the customer satisfaction on attributes in quadrant I and quadrant III. According to PGCV method the attributes are able to be ranked based on the highest value, which means the most potential toward customer satisfaction. Then, the results of the calculation are as follows:

Table 3. Improvement priority on quadrant I

No	Service Attribute	CL	PGCV	Order
5	Special baggage handling	75.00%	6.438	3
6	Check in counter procedure compliance	70.31%	7.574	1
9	Boarding gate staffs competencies	73.44%	6.817	2
10	Terminal safety and security	75.00%	6.438	3
18	Check in marshal initiative to help	75.00%	6.438	3

Table 4. Improvement priority on quadrant III

No	Service Attribute	CL	PGCV	Order
1	Passenger document handling	73.02%	7.083	4
2	Baggage profiling	74.60%	6.710	3
3	Boarding pass profiling	76.19%	6.337	5
4	Special/irregularities handling	74.60%	6.710	3
7	Boarding gate management procedure compliance	69.84%	7.828	2
8	Check in staffs competencies	73.02%	7.083	4
16	Office being communicative	68.25%	8.201	1

The same order is resulted based on the same value of PGCV index, it means that the attributes that have same value of index will generating same value of potential customer satisfaction.

Thus, in summary the result of Potential Gain in Customer Value on the Main Priority quadrant (Quadrant I) and Low Priority quadrant (Quadrant III) are:

1. Check in counter procedure compliance
2. Boarding gate staffs competencies
3. Special baggage handling
3. Terminal safety and security
4. Check in marshal initiative to help
5. Office being communicative
6. Boarding gate management procedure compliance
7. Baggage profiling
7. Special/irregularities handling
8. Passenger document handling
8. Check in staffs competencies
9. Boarding pass profiling

4. Conclusion

The result of this research is concluded as:

•According to gap analysis the compliance between services performances and customers' requirements is not comply. All attributes being asked have positive gap value, which means that all services performances provided does not met the customers' expectations. According to Conformance Level analysis there are 13 services performances attributes that does not meet the customers' expectation. These attributes are written with status Not Suitable.

•Importance and Performance analysis provide Cartesian Diagram that clustering attributes being asked into four different quadrants. There are 5 attributes located in Main Priority quadrant, 7 attributes located in Low Priority quadrant, 8 attributes located in Preserved quadrant, and 5 attributes located in Exaggerated quadrant.

•Potential Gain in Customer Value is able to generating attributes priority ranking. This method is able to cover IPA method weakness by generating the priority ranking. An improvement priority ranking is used to be able to improve customers' satisfaction by analyzing each service's attribute potential gain.

References

1. Barkelay, B. and Saylor, H. (1994), Customer Driven Project Management, A New Paradigm In Total Quality Management, Mc-Graw-Hill.Inc, Singapore.

2. Dznnurain, M., & Eskatrimurti. (2012). Analisis Kepuasan Pelanggan Terhadap Kualitas Pelayanan Perawatan Berkala Sepeda Motor dengan Menggunakan Metode Importance Performance Analysis dan Potential Gain In Customer Values (Studi kasus Bengkel Servis Ahass Honda).Journal of Industrial Research, Vol. XI, No. 2, Juli 2012, p. 87-96.

3. Fornell, C. (1992). A National Customer Satisfaction Barometer: The Swedish Experience, Journal of Marketing, January 1992 p 1-21.

4. IATA Airport Handling Manual 35th ed. (2014). Montreal, Geneva: International Air Transport Association.

5. Kotler, P. (1991), Marketing Management : Analysis, Planning, Implementation and Control, 7th ed., New Jersey: Prentice Hall Inc, 1991.

6. Kotler, P. & Armstrong, G. (1994). Principles of Marketing, New Jersey: Prentice Hall Inc, 1994.

7. Linus, D., Sinaga, T. S., & Pujangkoro, S. (2013). Perancangan Perbaikan Kualitas Pelayanan dengan Menggunakan Analisis Importance Performance dan Potential Gain Customer Value (Studi Kasus di Pt. XYZ). E-jurnal Teknik Industri FT USU, Vol.1, No.2, Maret 2013 p.16-20.

8. Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A Conceptual Model of Service Quality and Its Implications for Future Research. Journal of Marketing, Vol.49, Fall 1985, p. 41-50.

9. Parasuraman, A,., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality. Journal of Retailing, Vol. 64, No. 1, Spring 1988.

10. Ruhimat, D. (2008). Kepuasan Pelanggan, Jakarta: PT. Gramedia Pustaka Utama, 2008.

11. Suryawan, S. and Dharmayanti, D. (2013). Analisa Hubungan Antara Experiental Marketing, Customer Satisfaction dan Customer Loyalty Café Nona Manis Grand City Mall Surabaya, Jurnal Manajemen Pemasaran Vol. 2, No. 3, 2013.

12. Silva, F., & Fernandes, P. (2012) Empirical Study on the Student in Higher Education: Importance-Satisfaction Analysis. International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering, Vol. 6, No. 6, 2012.

13. Siregar, S. F. (2006). Analisis Tingkat Kualitas Pelayanan Dengan Metode Index Potential Gain in Customer Value (PGCV) in PT. Bank Muamalat Indonesia Cabang Medan. Jurnal Sistem Teknik Industri, Vol. 7, No. 4, Oktober 2006.

14. Tavakol, M., & Dennick, R. (2011) Making Sense of Cronbach's Alpha. International Journal of Medical Education, ISSN: 2042-6372, 2011; 2:53-55.
Zeithaml, Valerie, A. & Bitner, Mary J. (1996). Services Marketing, McGraw-Hill, New York, 1996.