



Quality Analysis of Digital Service Virtual Plasa Witel Samarinda Using e-Servqual Method

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ABSTRACT

Virtual Plasa is a new digital service from PT. Telkom, released in 2020, with the intention of providing communication services from Telkom concisely. This study aims to determine the quality of service at Virtual Plasa, identify and evaluate the causes of the gap, and recommend improvement. The results show that Virtual Plasa services have a significant level of service quality. Even if the average expectation is higher than the average perception, the difference is modest, and the overall service is good. The Wilcoxon test results show that only two of eighteen attributes have a significant negative value, which is the website has a positive image and follow up on the website as promised. The attribute "Follow up on the website as promised" appears in the IPA diagram's priority quadrant. This attribute's fulfillment gap is caused by information gap (-0.58). Recommendation for this issue involve scheduling management to monitor directly the transactions done, creating a record feature, and asking customers to fill out the feedback section after completing transactions in Virtual Plasa. On the IPA diagram, the attribute "website has a positive image" is found in the low priority quadrant. The recommendation include creating defined guidelines for the Virtual Plasa image.

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1. Introduction

Telecommunications network is the most fundamental thing in the Indonesian economy, especially when Indonesia has entered Industry 4.0. The telecommunications network has a positive impact on the business world so that it can significantly improve the economy (Arregui, Salvador, dan Vázquez 2017). The telecommunications industry is a high market concentration, with very dynamic and always growing ecosystem because it is triggered by technological advances and innovations in the digitalization era. PT. Telkom Indonesia is a state-owned company engaged in information and communication technology services, telecommunications networks. One of the digital services owned by Telkom is Indihome or Indonesia Digital Home. Indihome has been launched since 2015 and until now has more than 7.8 million customers throughout Indonesia (Rueda dan Calle 2017).

The customers is scattered even in the areas that far from the Plasa Telkom offices in each city, this can cause delays in delivery complaints and updates about existing services. Due to this, Telkom is trying to provide a solution to overcome this by creating a new service in the digital world, which is named Virtual Plasa. Virtual Plasa was launched in April 2020, coinciding with government recommendations regarding health protocols during the pandemic, with three main menus on the website, namely new installation services, customer complaints, and customer needs regarding other information. Virtual Plasa services are carried out by communicating directly between customers and employee by video calls(Arregui, Salvador, dan Vázquez 2017).

Even though PT. Telkom has only recently launched Virtual Plasa, an evaluation of quality service should be conducted as soon as possible. One attempt to determine the service quality of Virtual Plasa is to directly acquire customer feedback on the existing services. A survey using the e-Servqual method is intended to determine the level of service quality by calculating how wide the gaps are. One of those is between customer expectations and perceptions of Virtual Plasa Witel Samarinda, the results could defined which attributes could be prioritized for future improvements.

According to Mok, Sparks, and Kadampully (2013), Servqual method is a common tool for determining the gap between customer expectations and perceptions. In Tjiptono (2019), Zeithaml, et al. (2002) convey that e-Servqual is a conceptual model for enhance the effectiveness of electronic services. The e-Servqual model is an extension of the Servqual model that is used to assess the effectiveness and efficiency of website performance in order to obtain information in transaction and to ensure the smooth delivery of products and services.

2. Literature Review

Service

According to Prananda et al. (2019), the American Society for Quality Control defines quality as the whole character of a product or service, impacting its capacity to meet demands. Tjiptono (2019) defines services as a type of product in which the services generated might be pure services or require physical objects as the major condition.

Quality

According to (Fazizah et al. 2017), service quality is the product of good service. Product quality is a positive outcome obtained from the product. Quality for the company, according to (Afrizal dan Wahid 2019), is a factor present in a product that has value in line with the reason for which the product is created. In the 1994 edition of Webster's New World Dictionary of America English, there are nine definitions of quality. Four of them are closely related to the industrialized world and are inferred to be, "Quality hints at a perfection or a higher position than the rest of the segment," whereas according to some experts, quality is the fulfillment of consumer desires, conformity to established standards, and economic viability (Walujo et al. 2020).

E-Servqual

Quality may be measured in addition to expenses by conducting customer surveys on their perceptions of the product or organization quality using several metrics. Essentially, assessing the quality of services or products is the same as measuring customer satisfaction utilizing factors such as consumer expectations and perceptions (Dr. Juharni et al. 2017).

According to (N, Wardana, dan Sukaatmadja 2016), e-Servqual is a tool to measure the effectiveness and efficiency of website performance as long as it is used to obtain the right information in conducting transactions and the seamless delivery of products and services. In (Deo 2017), revealed that the development of e-Servqual was carried out to evaluate a service on the internet network and

Akbar (2016) stated that e-Servqual is a service quality model that is significant and can thoroughly evaluate the needs of electronic service quality. The dimensions of e-Servqual are (Tjiptono 2019):

1. Efficiency is the ability of customers to access the website, looking for product and information, and leaving the website with minimal effort.
2. Reliability is website availability and functionality.
3. Privacy is engagement service accuracy.
4. Fulfilment is ensured that customer data will not be shared with other parties.
5. Responsiveness is the company's ability to offer accurate information and warranty when problems arise.
6. Compensation is refunds, shipping and product handling fees customer.
7. Contact is to be able to connect with employees online.

According to (Tjiptono 2019), e-Servqual model has four gaps, which is the information gap, the design gap, the communication gap, and the fulfilment gap.

Importance Performance Analysis

Kotler (2009) argues that IPA diagrams can be used to sequence service elements and identify further actions (Nugraha, Harsono, dan Adianto 2014). This analysis will compare customer assessments of service quality expectations with service quality performance levels. The average of these values is inserted into a two-dimensional matrix, where the vertical axis representing the degree of importance and the horizontal axis representing the level of performance (Wardhani, Iriani, dan Handoyo 2019; Mas'ud et al. 2022).

According to Ho, Feng, and Yen (2014), Importance Performance Analysis is a solution to assist perceive the level of quality customers want by examining the four types of quality characteristics and developing strategic actions for each quadrant. The IPA matrix is divided into four quadrants, which are as follows:

1. First quadrant (C), customers think that the quality of service attributes is crucial, however the organization has failed to meet this expectation.
2. Second quadrant (K), customers think that the quality of service attributes is crucial, and the organization has exceeded expectations in this aspect.
3. Third quadrant (L), customers do not consider quality on these attributes, and the organization has failed to do so as well.
4. Fourth quadrant (P), customers do not think that quality of service attribute is important, although organization performs excellent services in these attributes.

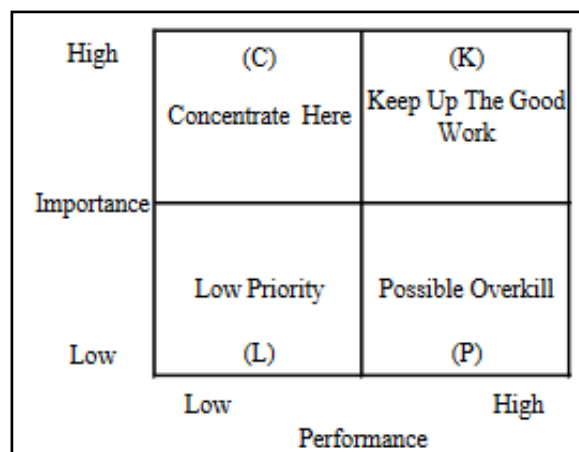


Figure 1. Importance performance analysis diagram

Non Parametric Test

In this study, descriptive statistical analysis (non-parametric test) was performed to present the results of respondents' surveys and questionnaires. The Wilcoxon Signed Rank Test with the SPSS software is then used to prove the study hypothesis that there is a gap between expectations and customer perceptions. The Wilcoxon Signed Rank test is a nonparametric paired sample test in which the data must be arranged first (Djarwanto 2003). The Z test could be applied to determine decision making in the Wilcoxon test. The decision-making process follows the same logic as the z test (Nurhalimah, Marwanti, dan Irianto 2017):

1. If $Z_{count} < Z_{table}$ then H_0 is accepted, it means that there is no significant difference between customer perceptions and expectations
2. If $Z_{count} > Z_{table}$ H_1 is accepted, it means that there is a significant difference between customer perceptions and expectations

The correlation analysis approach, according to Budiwanto (2017), is a way for determining whether or not there is a correlation between two or more variables. Correlation analysis involves the use of two or more variables. The degree of the correlation between variables represented by the correlation coefficient will be obtained from the correlation analysis coefficient. According to Ananda (2018), the Spearman Rank Correlation Coefficient is a nonparametric statistic that is applicable for ordinal data. Unlike the Pearson correlation, the Spearman Rank correlation does not require the assumption of normality or the normality test, making it appropriate for small sample data. After completing the Spearman Rank correlation analysis model, validation is performed using the provided criteria, namely by comparing the generated values with the table established as follows. If $\sigma < 0$, H_0 is accepted and H_a is rejected. Meanwhile, if $\sigma > 0$, H_0 is rejected and H_a is accepted (Firdaus, Nashiroh, dan Djuniadi 2020).

Sampling

The number of respondents is obtained from Lemeshow where there is an unknown or infinite population (Nanincova 2019). When it is unknown the level of P is in the population, it is recommended to choose 0.5 for P in the formula, for sample size will always provide enough observations, irrespective of the actual value of the true proportion (Lemeshow et al. 1990). Because it was seen in terms of cost, risk, and safety, this study chose a 10% accuracy level and a 95% confidence level. Because this degree of accuracy is often employed in this study, and its accuracy is believed to be indicative of current data because if a mistake occurs, it does not produce fatal errors or hazards, as in the research of pharmaceuticals used in medicine (Rahma, Ariska, dan Afriasari 2018).

$$n = \frac{Z_{1-\alpha/2}^2 P(1-P)}{d^2}$$

n = Number of samples

$Z_{1-\alpha/2}^2$ = Degree of confidence

P = Estimated maximum

d = Margin of error

3. Methodology

1. Observe and identify problem, research objectives, and determine the limit of research.
2. Collect the data needed and samples, by the following data:
 - a. Collecting method:
 - 1) Primary data, use a questionnaire to collect data customer's expectations and perceptions, manager's perceptions of customer expectation, and employee's perceptions of the design, operation, and service capabilities of Virtual Plasa.

- 2) Secondary data, picture of company, organizational structure, and customer data and study literature.
- b. Determine the number of respondents
 The Lemeshow formula used 95% confidence level and 10% margin of error.

$$n = \frac{1.96^2 \times 0.5 \times 0.5}{0.1^2}$$

$$= 96,04 \approx 100$$
3. Determine the priority attributes
 - a. Diagram IPA
 The value of consumer expectations and perceptions is determined from primary data, and the difference between the two values is the fulfillment gap, which is then placed into the IPA diagram. This is intended to make it easier for companies to identify priority changes and actions that should be implemented.
 - b. Look for the cause of fulfillment gap
 A gap between customers expectations and perceptions could be produced by a variety of factors, including an information gap, a design gap, and a communication gap. The data is then evaluated on the three gaps. These are based on questionnaire for manager and interview with the employees.
4. Analysis the priority attribute and propose improvement

4. Results and Discussion

Questionnaire Results

Based on the validity and reliability test, 100 data obtained is valid and reliable. Furthermore, the fulfillment gap is calculated using data from customer. The result is shown on Table 1. By calculating the difference in perception and expectation values, two attributes have a positive value, indicating that the customer believes the service received met expectations, three attributes have a zero value, indicating that the service received is the same as the expected service, and fifteen other attributes have gaps, indicating that the services provided do not meet customer expectations.

Table 1. Fulfillment gap

No	Attribute	Fulfillment Gap
1	The website is easy to find in the search page	- 0,08
2	The registration process on a website is easy to do	- 0,15
3	Easily find a service on the website	- 0,11
4	The website executes requests accurately	- 0,13
5	The website has comprehensive features	- 0,02
6	Attractive website display	0,05
7	User friendly	- 0,01
8	Website has a positive image	- 0,2
9	Follow up on the website is in accordance with the agreement	- 0,18
10	The website ensures that customer data is always safe	- 0,08
11	Communication made on the website is safe	0
12	Easy to use	0,01
13	Website addresses customer needs immediately	0
14	Website can be accessed at anytime	- 0,1
15	The website has comprehensive information about company's products offered	0
16	The website compensates for the trouble it causes	- 0,1
17	Employees on the website serve customer quickly	- 0,01
18	Employees on the website understand the company's products offered	- 0,02
Average		- 0,06

Wilcoxon Test

The Wilcoxon test was used to determine the statistical significance of the customer's perception and expected value. Two of the eighteen attributes are significantly negative since they have the value of Asymp Sig smaller than 0.05. The two attributes are "Website has a positive image" (0.004) and "Follow up on the Website in accordance with the agreement" (0.027). This signifies that there is a difference between the expected and perceived values for the two qualities, with a negative number in the fulfillment gap indicating that the service on that attribute is considered bad. Meanwhile, non-significant attributes are assigned a value of zero on the fulfillment gap. The average fulfillment gap reduced to -0,02 once this test was done.

Spearman Rank Correlation

Spearman Rank technique was used to analyze the relation between customer perceptions and overall service quality. Table 2 displays the Spearman correlation test results. One attribute has a weak correlation, which indicates it has little influence on consumer perceptions of the total service. While the other seventeen criteria have a sufficient impact on the total service evaluation. When the correlation per existing attribute is examined, it can be concluded that improving the service for each attribute has a significant impact on the total service quality score.

Table 2. Correlation Spearman Test

Attribute	Coefficient value	Correlation
E1	0,249	Weak
E2	0,368	Sufficient
E3	0,263	Sufficient
RL1	0,34	Sufficient
RL2	0,3	Sufficient
F1	0,29	Sufficient
F2	0,374	Sufficient
F3	0,455	Sufficient
F4	0,388	Sufficient
P1	0,391	Sufficient
P2	0,488	Sufficient
RP1	0,362	Sufficient
RP2	0,445	Sufficient
RP3	0,406	Sufficient
COM1	0,341	Sufficient
COM2	0,366	Sufficient
CON1	0,445	Sufficient
CON2	0,426	Sufficient

Importance Performance Analysis Diagram

Improvement is prioritized on qualities with negative significance and based on the position of the attribute in the importance performance analysis diagram. Figure 3 shows that two significant attributes, which is "Follow-up on the Website in accordance with the agreement" is in quadrant III. While "Website has a positive image" is in quadrant II,

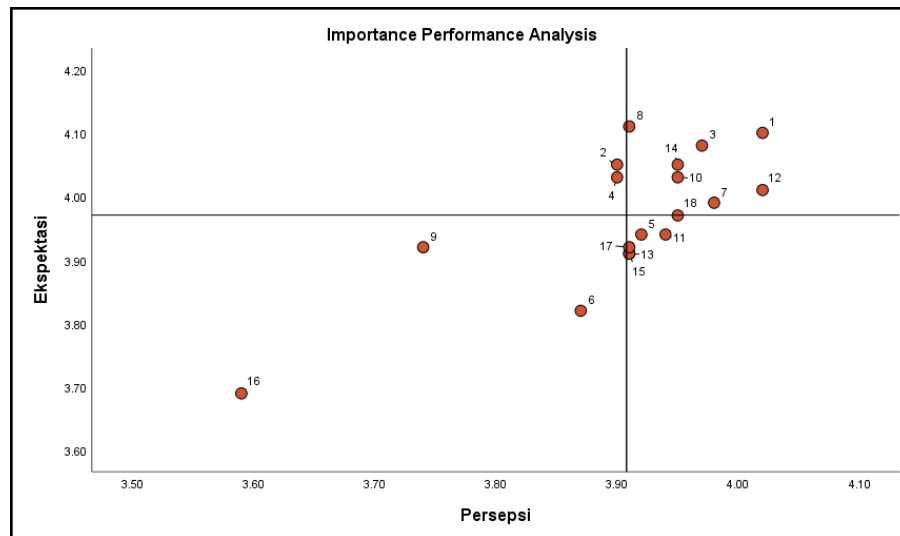


Figure 3. Diagram IPA of Virtual Plasa attributes

The Caused of Fulfillment Gap

1. Information gap. The gap between manager's perception and customer's expectation is one of the causes of fulfillment gap. This might develop as a result of a lack engagement between management and customers, a failure in communication between management and employees, or a failure to handle customer concerns. Attribute The information gap for "Follow up on the Website in line with the agreement" is -0.58. The company believes it has performed in accordance with the promise made, but the customer feels that the action performed is not in accordance with the agreement created while transaction. This can occur as a result of not adequately research to gather information about client needs, as well as a lack of communication between management and employees who have direct contact with customers.
2. Design gap. The gap between company's perception and customer's expectations in website design and operation is one of the causes of fulfillment gap. It is essential to understand the company's standards for employees on the first desk. Causes of attribute gaps "The website has a positive image" due to the absence of a standard that was set formally or in writing at the time of design Virtual Plasa.
3. Communication gap. One of the causes of the fulfillment gap is between employees' understanding of website service capabilities. Another reason of this gap is poor internal communication, which may be avoided by communicating what has been promised to customers so that no promises are made in excess. Based on interview and questionnaire, the company has been exceed he customer's expectation.

Determining the Priority Attributes

The fulfillment gap is caused by various different gaps, including the information gap, design gap, and communication gap. Based on data processing from customer, management, and employee perceptions, it is known that the design gap and the information gap are the cause of the fulfillment gap on the two significantly negative attributes. "Follow-up on the Website in accordance with the agreement" takes priority over the other attribute. On K's quadrant meant customers do not consider quality on these attributes and the organization has failed to do so as well, but the customer expectation still lower than customer perception. So, there is still space for Virtual Plasa to improve their service on the attribute. "Website has a positive image" on L's quadrant means customers think that the quality of service attributes is crucial and the organization has exceeded expectations in

this aspect, but this attribute expectation is still higher than the perception. So, there is still space for Virtual Plaza to improve their service on the attribute.

5. Conclusion

Based on the data results, Virtual Plaza's service quality is scored quite high, despite the fact that the average expectation exceeds the average perception. This is due to the slight difference and the overall service value is good, which is 3.92 on a scale of one to five. Furthermore, the Wilcoxon test results revealed that only two of the eighteen attributes is negatively significant between perceptions and expectations, while the other sixteen attributes are insignificant or considered already meet customer expectations. The foremost improvement priority is attribute "Follow-up on the Website in accordance with the agreement". This attribute is caused by an information gap, thus the proposed improvement is to schedule periodic management control during transactions, additional features specifically recording feature, and ask the customer to fill out the feedback fields. While the attribute "Website has a positive image" is caused by design gap, thus the proposed improvement is to making a standard formally regarding the Virtual Plaza image.

References

- Arregui, Iñigo, Beatriz Salvador, dan Carlos Vázquez. 2017. "A numerical strategy for telecommunications networks capacity planning under demand and price uncertainty." *Journal of Computational and Applied Mathematics* 318: 491–503.
<http://dx.doi.org/10.1016/j.cam.2016.01.056>.
- Deo, Pondaag G. E. 2017. "Analisis Kualitas Layanan Lazada Dengan Menggunakan Metode E-Servqual dan IPA." 2(1): 1–19.
- Djarwanto. 2003. *Statistik Nonparametrik*. 1 ed. Yogyakarta: BPFE.
- Dr. Juharni, M S, M S Dr. Guntur Karnaeni, S.S.M.S. Sobirin, dan D M. 2017. *Manajemen Mutu Terpadu (Total Quality Management)*. SAH MEDIA.
- Fazizah, Amma et al. 2017. "Journal Knowledge Industrial Engineering (JKIE) Keywords : Harga , Kualitas , Kepuasan Konsumen." (7): 51–62.
- Firdaus, Agung adi, putri khoirin Nashiroh, dan Djuniadi. 2020. "Hubungan Nilai Matematika Dengan Prestasi Belajar Pemrograman Berorientasi Objek Pada Siswa Kelas Xii Jurusan Rpl Smk Ibu Kartini Semarang." 9: 32–45.
- Ho, Li-hsing, Shu-yun Feng, dan Tieh-min Yen. 2014. "Using Modified IPA to Improve Service Quality of Standard Hotel in Taiwan." (June): 222–34.
- Lemeshow, Stanley, david w. hosmer Jr., Janelle Klar, dan stephen k. Lwanga. 1990. *Adequacy of Sample Size in Health Studies*. ed. 1. Chischester.
- Mas'ud, M. Imron et al. 2022. "Effectivity Green Productivity Basis Triple Helix in Tofu Central Industry." *Seybold Report* 17(8): 1024–36.
- Mok, C, B Sparks, dan J Kadampully. 2013. *Service Quality Management in Hospitality, Tourism, and Leisure*. Taylor & Francis.
- N, I Wayan Alit Mahendra Putra A, Made Wardana, dan I Putu Gde Sukaatmadja. 2016. "Pengaruh E-Servqual Terhadap Customer Satisfaction , Trust , Dan Word Of Mouth Peserta Bpjs Ketenagakerjaan I Wayan Alit Mahendra Putra A N 1 Fakultas Ekonomi dan Bisnis Universitas Udayana (Unud), Bali , Indonesia PENDAHULUAN Jaminan sosial telah diter." 11: 3647–82.
- Nanincova, Niken. 2019. "Pengaruh Kualitas Layanan Terhadap Kepuasan Pelanggan Noach Cae And Bistro." 7(2).
- Nugraha, Rizal, Ambar Harsono, dan Hari Adianto. 2014. "Usulan Peningkatan Kualitas Pelayanan Jasa pada Bengkel ' X ' Berdasarkan Hasil Matrix (Studi Kasus di Bengkel AHASS PD . Sumber Motor Karawang)." 01(03): 221–31.
- Nurhalimah, Sri Marwanti, dan Heru Irianto. 2017. "Analisis Dampak Pembangunan Perikanan Pantai Di Tapaeamatan Pacitan Kabupaten Pacitan Terhadap Kondisi Sosial Ekonomi Masyarakat Sekitar." 5(1).
- Prananda, Yandra, Prodi Teknik Industri, Jurusan Teknik Industri, dan Fakultas Teknik Industri. 2019.

- “Penerapan metode service quality (servqual) untuk peningkatan kualitas pelayanan pelanggan.” 12(1): 1–11.
- Rahma, Cukri, Angga Ariska, dan Villa Afriasari. 2018. “Optimalisasi pelayanan unit bpjs rsud melalui perhitungan waktu siklus operator pelayanan sep.” 4(April): 11–20.
- Rueda, Diego F, dan Eusebi Calle. 2017. “Using interdependency matrices to mitigate targeted attacks on interdependent networks: A case study involving a power grid and backbone telecommunications networks.” *International Journal of Critical Infrastructure Protection* 16: 3–12. <http://dx.doi.org/10.1016/j.ijcip.2016.11.004>.
- Tjiptono, Fandy. 2019. *Pemasaran Jasa-Prinsip, Penerapan, dan Penelitian-Edisi Terbaru*. 1 ed. Yogyakarta.
- Walujo, D A et al. 2020. *Pengendalian Kualitas*. Scopindo Media Pustaka.
- Wardhani, Sylvia Eka, Iriani, dan Handoyono. 2019. “Analisis Kepuasan Pelanggan Jasa Cuci Dengan Metode Servqual , Zone Of Tolerance , Dan Importance Performance Analysis Di Vicha Laundry , Surabaya.” 14(02): 13–21.