

Solo Technopark Service Quality Development Strategy to Increase Visitor Satisfaction using CARTER

Fanny Mulya Kirana¹, Katon Muhammad², Niko Siameva Uletika³, Telma Anis Safitri⁴, Rahmad Ramdhan Siregar⁵

¹Industrial Engineering, Faculty of Science and Technology, University of Jenderal Soedirman, Indonesia ²Industrial Engineering, Faculty of Science and Technology, University of Jenderal Soedirman, Indonesia ³Industrial Engineering, Faculty of Science and Technology, University of Jenderal Soedirman, Indonesia ⁴Management, Economic and Business Faculty, University of Jenderal Soedirman, Indonesia ⁵Development Economics Group, Wageningen University and research, Belanda

Abstract The high attendance at Solo Techno Park since its inauguration last year highlights the enthusiasm of Surakarta residents for the facility. However, this enthusiasm is not matched by the effective performance of the available facilities. This study aims to measure the quality level of Solo Techno Park using the CARTER model with the Customer Satisfaction Index and Importance Performance Analysis methods to assess visitor satisfaction, identify priority improvement criteria, and provide strategic development recommendations. Data were collected through visitor satisfaction questionnaires regarding the importance and satisfaction with Solo Techno Park facilities and services. The research findings indicate a score of 82% in the "Good" category, suggesting that overall visitors are quite satisfied with the facilities at Solo Techno Park but expect improvements in quality. Priority improvements are identified in Quadrant I of the Cartesian Diagram, comprising five attributes that form the basis of quality development strategies.

Keywords Customer Satisfaction Index; Importance Performance Analysis; Quality Improvement Priorities; CARTER Model

INTRODUCTION

Solo Techno Park (STP) is an integrated area focused on Science and Technology (IPTEK), combining the development of science, market needs. industry. business. and regional competitiveness located in Surakarta. It functions as vocational education center. technology а innovation hub, and research center. The park, inaugurated in February 2023, attracts many visitors, including students from various regions, offering facilities like basketball and futsal courts, a food park, and the Solo Trade Center with amenities such as the Solo Creative & Innovation Hub, Gaming & Community Hub, Digipreneur Hub, and Co-working Space.

Despite high visitor numbers, some facilities are underutilized, leading to an imbalance in visitor distribution. For instance, the Game Working Space and Cyber Security areas see few visitors, while other facilities are crowded. This uneven usage results in operational inefficiencies, such as frequently turned-off escalators, discouraging

[™]Correspondence to : <u>telma.anis@unsoed.ac.id</u>

exploration and diminishing the overall visitor experience. Consequently, comprehensive quality development is essential to ensure all areas are fully operational and attractive to visitors, thus enhancing STP's appeal.

As a priority program for the Surakarta local government, STP requires continuous quality improvement. Quality development is a crucial aspect in enhancing the competitiveness and sustainability of a tourist destination (Hendi, 2023). The primary priority for a company, used as a benchmark for its competitive advantage, is guality. The initial step in ensuring the quality of facilities and services is to understand the needs and expectations of customers. One of the most effective ways to understand customers' needs and expectations is by measuring their satisfaction (Bhote, 1996; Tjiptono, 2007). Knowing customer satisfaction levels is the foundation for developing better and more sustainable service improvement priorities (Bhote, 1996). Several common methods for measuring customer satisfaction levels include SERVQUAL, Kano Model, and Customer Satisfaction Index (CSI). CSI is the most effective method for measuring trends and guiding corrective actions (Bhote, 1996).

This study assesses visitor satisfaction at STP using the CARTER Model, based on guidelines from Indonesian Ministry of Research and the Technology and Keputusan MENPAN No. 63 tahun Pendayagunaan 2003 (Kep.Mentri Aparatur Negara, 2003). The CARTER Model, an extension of SERVQUAL, evaluates Assurance, Reliability, Tangibles, Empathy, and Responsiveness, with an added Compliance dimension (Zakaria, 2014; Owen, 2001). This model is suitable for STP due to its unique characteristics.

To prioritize improvements, Importance Performance Analysis (IPA) will be used to measure the importance and performance of attributes, providing strategic guidance for innovation and quality enhancement (Supranto,2006; Martilla, 1977). IPA's known for itssimplicity and flexibility, making it ideal for setting priorities with limited resources (Tjiptono,2007). The combined use of CSI and IPA will provide strategic guidance for innovation, prioritization, and quality enhancement of STP's facilities and services (Sabaruddin, 2024).

By monitoring visitor satisfaction, we can inform decision-making to expand visitor coverage and improve service and facilities, thereby boosting STP's competitiveness and visitor loyalty (Bhote, 1996). This research will measure customer satisfaction using CSI and IPA approaches to develop strategies for maintaining service and facility quality in line with visitor expectations.

RESEARCH METHOD

This research began with field studies, literature reviews, problem identification, and the development of a questionnaire using the CARTER model. The questionnaire was created based on techno park guidelines and Keputusan MENPAN No. 63 of 2003.

Tabel 1 Questionnaire		
Dimensions	Code	Attribute
Compliance	1	Strategic Location
	2	Modern and varied
		workspcae
	3	Facilities with the
		latest technology
	4	The existence of an
		event or program
	5	Facilities that
		encourage
		collaboration of
		various entities
	6	Varied and affordable
		food options

	7	Attractive, well-
		maintained, and
		comfortable facilities
Tangible	8	Easy access to various
•		facilities
	9	Cleanliness and
		comfort of supporting
		service facilities
	10	Friendly and polite
		officers
	11	Adequate place and
		location
Poliability	12	Accurate information
Teliability	12	Officers do not
	15	discriminato
Deeneneiveneee	11	
Responsiveness	14	Facility for providing
		reedback and
		suggestions
	15	Responsiveness of
		staff
	16	Alert security
		personnel
Assurance	17	Spacious and secure
		parking
	18	Accuracy of opening
		and closing hours
	19	Sense of security and
		comfort in Solo
		Technopark
	20	Staff respond well to
		visitor complaints
	21	Willingness of staff to
		assist
Emphaty	22	High initiative among
Linplicity		staff
	23	Staff provide comfort
	20	in service to visitors

Subsequently, sample size calculation was conducted using G*Power software (Erdfelder, 1996). The type of analysis used to determine the sample size was a statistical test "Means: Difference Between Two Independent Means (Two Group)" with a power analysis type of "A Priori: Compute Required Sample Size." The input parameters included an effect size of 0.5, alpha (α) of 0.05, power (1- β) of 0.80, and an allocation ratio (N1/N2) of 1.



Figure 1. Sample size calculation using G*Power

The total sample size calculated was 128, divided into two groups: Group 1 (importance) with 64 samples and Group 2 (satisfaction) with 64 samples (Figure 1). The sample comprised 64 respondents each for group 1 (importance) and group 2 (satisfaction), selected through non-probability purposive sampling among visitors who had visited Solo Techno Park at least once. Respondents were asked to complete a questionnaire using likert scale based on their experiences and expectations regarding the facilities at Solo Techno Park (Table 2).

Tabel 2 Likert Scale		
Answer	Score	
Very Important / Very Satisfied	4	
Important / Satisfied	3	
Not Important / Not Satisfied	2	
Very Not Important / Very Not	1	
Satisfied		

Based on Table 3, the 64 respondents were identified based on their characteristics. The characteristics of respondents are fundamental for understanding the visitors or the community being studied. The respondent characteristics includes information such as age, gender, occupation, frequency of visits, and other aspects that influence preferences and needs from the visitor's perspective.

Table 3.	Respondent	characteristic
----------	------------	----------------

No	Characte- ristics	Category	Freq	%
1.	Gender	Male	29	45%
		Female	35	55%
2.	Age	18 to 20	11	17%
		21 to 23	34	53%
		24 to 26	8	13%

[™]Correspondence to : <u>telma.anis@unsoed.ac.id</u>

No	Characte- ristics	Category	Freq	%
		27 to 29	11	17%
3.	Domicile	Solo	40	63%
		Yokyakarta	9	14%
		Sukoharjo	3	5%
		Sragen	1	2%
		Karanganyar	1	2%
		Jember	2	3%
		Jawa Timur	1	2%
		Jawa Tengah	3	5%
		Jakarta	2	3%
		Bogor	1	2%
		Boyolali	1	2%
4.	Occupation	Student	39	61%
		Self- employed	1	2%
		Businessman	3	5%
		Civil servants	4	6%
		Waiter	6	9%
		Private	5	8%
		Laborer	1	2%
		Graphic designer	1	2%
		Teacher	2	3%
		Cashier	1	2%
		Kitchen restaurant	1	2%
5.	Number of	1 time	19	30%
	last month	2 - 3 times	16	25%
		4 - 6 times	8	13%
		7 - 10 times	14	22%
	5 (First time	7	11%
6.	Purpose of visit	Education	29	45%
		Internship	3	5%
		Photography	13	20%
		Recreation	13	20%
		Culinary	2	3%
		Sport	4	6%
7.	Information	Advertisement	2	3%
		Location	1	2%
		Social media	31	48%
		Recommenda tions	25	39%
		Official website	5	8%

Received: December 2025 Revised: January 2025 Accepted: February 2025

No	Characte- ristics	Category	Freq	%
8.	Plan for next visit	No, don't have any plans yet	16	25%
		Yes, in the next 1 month	20	31%
		Yes, in the next 1 week	11	17%
		Yes, this week	17	27%

Next, the questionnaire was tested for validity and reliability. Validity testing aimed to ensure the questionnaire's validity, while reliability testing measured its consistency (Ghozali, 2009; Marzuki et al, 2020). If the questionnaire proved valid and reliable, data were analyzed using the Customer Satisfaction Index (CSI). The steps taken to determine the Customer Satisfaction Index (CSI) involve calculating MIS, MSS, WF, and WS (Devani, 2016). After obtaining the total WS value, the overall customer satisfaction or Customer Satisfaction Index can be computed and categorized on tabel 4.

$$MIS = \frac{[\sum_{i=1}^{n} Y_i]}{n} \qquad \dots \dots (1)$$

$$MSS = \frac{[\sum_{i=1}^{n} X_i]}{n}$$
 (2)

Explanation :

Yi	=	Importance score of attribute
		Y for the i-th item
Xi	=	Satisfaction score of attribute

- X for the i-th item
- *n* = Number of respondents

WF =	$\frac{MISi}{\sum_{i=1}^{p}MISi} X \ 100\%$	(3)
------	---------------------------------------------	-----

 $WSi = WFi \times MSS \qquad \dots \dots (4)$

$$CSI = \frac{\sum_{i=1}^{p} WSi}{HS} X 100\%$$
 (5)

Explanation :

HS = Highest Scale

Table 4. Customer satisfaction criteria

Index	Interpretation
87% < X	Excellent
$84\% < X \le 87\%$	Very good
$80\% < X \le 84\%$	Good

⊠Correspondence to : telma.anis@unsoed.ac.id

Index	Interpretation
$77\% < X \le 80\%$	Borderline
$71\% < X \le 77\%$	Cause for concern
$64\% < X \le 71\%$	Poor
$X \le 64\%$	Very poor

Subsequently, an analysis of importance and performance was conducted based on the CSI method calculation using Importance Performance Analysis (IPA). IPA was used to systematically prioritize quality attributes for improvement and allocate resources effectively (Martilla, 1997; Helia et al , 2018; Gunawan, 2018). IPA calculations involve condormity levels and quadrant matrices (equation 6). Service quality is rated as highly satisfactory and exceeds expectations when the condormity level exceeds 100%.

$$T_{k} = \frac{X_{i}}{V_{i}} \times 100\%$$
 (6)

Explanation :

 T_k = Conformity Level

Xi = Satisfaction score

Yi = Importance score

Improvement priorities can be determined using a Cartesian diagram (table 5) by calculating the average value of each attribute using the following equation [11]:

$$\overline{X} = \frac{\sum Xi}{n} \qquad \dots \dots (7)$$

 $\overline{Y} = \frac{\sum Yi}{n} \qquad \dots \dots \tag{8}$

Explanation :

 $\sum Xi$ = Total satisfaction score

 $\sum Yi$ = Total satisfaction score

n = Total respondent

Table 5. Cartesian diagram

Quadrant I	Quadrant II
Concreate here	Keep Up The Good Work.
Quadrant III	Quadrant IV
Low Priority	Possible Overkill

The Cartesian diagram is divided into four quadrants based on the results of importance-performance measurements (Tjiptono, 2007):

- Quadrant I : Concentrate Here This quadrant represents a priority for improvement, where attributes have high importance but low performance.
- 2. Quadrant II : Keep Up the Good Work Attributes in this quadrant have both high importance and high performance.

- 3. Quadrant III : Low Priority Attributes in this quadrant have both low importance and low performance.
- 4. Quadrant IV : Possible Overkill Attributes in this quadrant have low importance but high performance.

Results and Discussion

Based on Table 3. it is evident that Solo Techno Park attracts both genders and is popular among young adults, particularly Generation Z, who seek creative and educational activities. The majority of visitors are local residents, with 34 being students, indicating that Solo Techno Park aligns with its founding purpose and the President of Indonesia's Nawa Cita 9 vision. Most respondents visit for educational purposes, establishing Solo Techno Park as a well-known place for learning and knowledge development. Social media is the dominant source of information, highlighting its role in disseminating information and influencing visitor decisions. Information on visit plans is crucial for measuring visitor satisfaction and loyalty, aiding the company in predicting future visit rates.

Validation and Reliability Test

In this study, with a sample size of 64 respondents, the critical r-value at a 5% significance level was determined to be 0.244. Subsequently, a validity test was conducted using SPSS software for all attributes, and the results showed that the calculated rcount > rtabel for all attributes (Table 6). Therefore, it can be concluded that all the instruments are valid and can be used. Table 6. Validity test

Attribute	rcc		Nata	
	Importance	Satisfaction	rtabei	NOLE
1	.615**	.553**	0.244	Valid
2	.736**	.716**	0.244	Valid
3	.515**	.578**	0.244	Valid
4	.615**	.441**	0.244	Valid
5	.757**	.774**	0.244	Valid
6	.537**	.587**	0.244	Valid
7	.719**	.603**	0.244	Valid
8	.581**	.475**	0.244	Valid
9	.778**	.676**	0.244	Valid
10	.722**	.751**	0.244	Valid
11	.679**	.664**	0.244	Valid
12	.689**	.701**	0.244	Valid
13	.730**	.686**	0.244	Valid
14	.707**	.715**	0.244	Valid
15	.684**	.732**	0.244	Valid

rcount **∆**ttribute rtabel Note Importance Satisfaction .746** 16 .812** 0.244 Valid .683** .629** 17 0.244 Valid .710** .601** 18 0.244 Valid .657** 19 .612** 0.244 Valid 20 .761** .770** 0.244 Valid .744** 21 .690** 0.244 Valid 22 .797** .721** 0.244 Valid .766** .810** 0.244 23 Valid

Reliability testing is used to measure the dependability of a questionnaire and ensure its suitability for research purposes (Marzuki, 2020) In this study, reliability testing was conducted using SPSS software with the Cronbach Alpha technique. A questionnaire is considered reliable if the Cronbach Alpha value is > 0.6 (Ghozali, 2009).

Table 7. Reliability test

Cronbac	N of itoms		
Importance	Satisfaction	N OI ILEINS	
0.940	0.946	23	

The test results (Table 7) showed that all questionnaires had Cronbach Alpha values > 0.6, indicating that they are reliable for further measurement and research

Customer Satisfaction Index

The Customer Satisfaction Index (CSI) is calculated to measure overall customer satisfaction, by considering the importance of product or service attributes (Bhote, 1996; Helia, 2018; Widodo et al, 2018; Fauzi et al, 2019):

Table 8. Customer	satisfaction	index	calculation
-------------------	--------------	-------	-------------

Dimension	Attribute	MIS	MSS	WF	WS	CSI	
	1	3,266	3,406	4,125	14,050		
	2	3,438	3,297	4,342	14,314		
	3	3,625	3,109	4,579	14,237	010/	
Compliance	4	3,469	3,078	4,381	13,486	81%	
	5	3,438	3,406	4,342	14,789		
	6	3,328	3,188	4,204	13,399		
	7	3,453	3,359	4,362	14,652	81%	
<i>T</i> 11	8	3,313	3,016	4,184	12,617		
Tangible	9	3,531	3,234	4,460	14,426		
	10	3,391	3,391	4,283	14,521		
	11	3,406	3,422	4,302	14,722		
Reliability	12	3,500	3,281	4,421	14,506	83%	
	13	3,453	3,313	4,362	14,448		
Responsiveness	14	3,328	3,266	4,204	13,728	010/	
	15	3,438	3,234	4,342	14,043	81%	
	16	3,547	3,313	4,480	14,840		
Assurance	17	3,531	3,234	4,460	14,426	84%	
	18	3,438	3,406	4,342	14,789		

Correspondence to : telma.anis@unsoed.ac.id

Received: December 2025 Revised: January 2025 Accepted: February 2025

Dimension	Attribute	MIS	MSS	WF	WS	CSI	
	19	3,563	3,500	4,500	15,749		
Emphaty	20	3,438	3,266	4,342	14,179		
	21	3,469	3,313	4,381	14,513	81%	
	22	3,375	3,203	4,263	13,655		
	23	3,438	3,250	4,342	14,111		
	Г	otal CSI				82%	

The total CSI index value obtained was 82%. According to the CSI value criteria (Table 8), a value of 82% falls within the range of $80\% < X \le 84\%$, indicating that the visitor satisfaction for Solo Techno Park is categorized as "Good."

Importance Performance Analysis

Importance-Performance Analysis (IPA) is used to provide information on the service factors that most influence customer satisfaction and loyalty, and those that need improvement from the consumer's perspective (Martilla, 1977; Tirtawati, 2023).

Table 9. Importance	performance	analysis	calculation
---------------------	-------------	----------	-------------

Dimensi	Atribut	Importance	Satisfaction	AVG. Satisfaction (X)	AVG. Importance (Y)	GAP	TKI %
	1	209	218	3,406	3,266	0,141	104
	2	220	211	3,297	3,438	-0,141	96
Comulianaa	3	232	199	3,109	3,625	-0,516	86
Compliance	4	222	197	3,078	3,469	-0,391	89
	5	220	218	3,406	3,438	-0,031	99
	6	213	204	3,188	3,328	-0,141	96
	М	iean		3,247	3,427	-0,18	94,933
	7	221	215	3,359	3,453	-0,094	97
Tanaihla	8	212	193	3,016	3,313	-0,297	91
Tungiore	9	226	207	3,234	3,531	-0,297	92
	10	217	217	3,391	3,391	0	100
	М	iean		3,25	3,422	-0,172	94,979
	11	218	220	3,438	3,406	0,031	101
Reliability	12	224	210	3,281	3,5	-0,219	94
	13	221	212	3,313	3,453	-0,141	96
	М	lean		3,344	3,453	-0,109	96,865
B	14	213	209	3,266	3,328	-0,063	98
Responsiveness	15	220	207	3,234	3,438	-0,203	94
Mean			3,25	3,383	-0,133	96,106	
	16	227	212	3,313	3,547	-0,234	93
Assurance	17	226	207	3,234	3,531	-0,297	92
	18	220	218	3,406	3,438	-0,031	99
	19	228	224	3,5	3,563	-0,063	98
Mean			3,363	3,52	-0,156	95,58	
	20	220	209	3,266	3,438	-0,172	95
Emphate	21	222	212	3,313	3,469	-0,156	95
Emphaty	22	216	205	3,203	3,375	-0,172	95
	23	220	208	3,25	3,438	-0,188	95
Mean				3,258	3,43	-0,172	94,987
	TOTAL Mean			3,282	3,442	-0,154	95,575

Table 9 provides values of X and Y to determine the position of attributes on the Cartesian quadrant for assessing customer performance and satisfaction, which can be visualized in Figure 2



Figure 2. Cartesian Quadrant

Based on Figure 2, there are five attributes located in the "concrete here" quadrant. This indicates that these attributes are top priorities requiring immediate attention to improve their quality and enhance visitor satisfaction. These attributes include Facilities with the latest technology (attribute 3), The existence of an event or program (attribute 4), Cleanliness and comfort of supporting service facilities (attribute 9), Accurate information (attribute 12), and Spacious and secure parking space (attribute 17).

Development Strategies

The proposed quality development strategies are based on information based on Importance Performance Analysis (IPA) method, focusing on attributes located in the "concrete here" quadrant, and visitor feedback from the questionnaire. Proposed suggestions include :

- 1. Modern Facilities with Latest Technology
 - Optimize Internet Connection : Enhance coverage and speed of internet connection throughout Solo Techno Park by partnering with internet service providers to ensure comprehensive and stable wifi.
 - IT Equipment Maintenance : Conduct regular checks and maintenance on IT equipment and security systems to ensure optimal functionality.
 - Escalator Repair : Schedule regular maintenance for escalators and ensure technicians are available for immediate repairs.
 - 4) Facility Access: Ensure all facilities are available and unlocked during operational hours.
 - 2. Attractive Events and Programs
 - Variety and Frequency of Events : Increase the variety and frequency of events by collaborating with universities, communities, and institutions to host regular and scheduled programs in less

[™]Correspondence to : <u>telma.anis@unsoed.ac.id</u>

frequented areas like the Games Working Space and Cyber Security.

- Event Promotion : Develop an effective promotion strategy using social media, the website, and posters/notice boards within Solo Techno Park to inform visitors about upcoming events.
- 3. Support Facilities (e.g., Toilets, Prayer Rooms)
 - 1) Regular Checks : Conduct regular inspections of support facilities to ensure cleanliness and comfort for visitors.
 - Routine Maintenance : Establish a routine maintenance schedule to keep support facilities in good condition and ready for use.
- 4. Information Accuracy
 - Regular Updates : Implement a system for regularly updating accurate information via the website, social media, and information boards at Solo Techno Park.
 - Coordination with Social Media Team : Ensure good coordination between the social media team and Solo Techno Park management to provide accurate and upto-date information to the public.
- 5. Spacious and Secure Parking
 - 1) Expand Parking Area : Consider expanding the parking area or finding alternative solutions, such as collaborating with nearby parking facilities.
 - 2) Enhance Security : Increase security by adding CCTV, security personnel, and adequate lighting to ensure visitors feel safe when parking their vehicles.

CONCLUSION

Based on the assessment using Customer Satisfaction (CSI) and Importance Index Performance Analysis (IPA) methods, the overall satisfaction level of Solo Techno Park visitors reached 82%, indicating a majority of visitors are satisfied with the provided services. The satisfaction scores are calculated using the CARTER model, with each dimension receiving the following scores: 81% for Compliance, 81% for Tangibles, 83% for Reliability, 84% for Assurance, and 81% for Empathy. Further analysis identified five attributes requiring immediate improvement, including latest technology facilities and security, appealing events or programs, supportive amenities such as clean and comfortable facilities, accurate information provision, and spacious and secure parking availability. Quality enhancement strategies involve optimizing internet connection, IT equipment maintenance, escalator repair, variety and frequency of events, event promotion, conduct regular checks and routine maintenance for support facilities, information regular updates, expanding parking area and security.

References

- Bhote, K.R. 1996. Beyond Customer Satisfication to Customer Loyalty: The Key to Greater Profitability.
- Devani, Vera and Rizki Anwar.2016. "Analisis Kepuasan Pelanggan dengan Menggunakan Metode Customer Satisfaction Index (CSI) dan Potential Gain In Customer Value (PGCV)", Jurnal Rekayasa Dan Manajemen Sistem Informasi, Vol.2, No 2.
- Fauzi, A A and T. Suryani. 2019. Measuring the effects of service quality by using CARTER model towards customer satisfaction, trust and loyalty in Indonesian Islamic banking," Journal of Islamic Marketing, vol. 10, no. 1, pp. 269– 289, doi: 10.1108/JIMA-04-2017-0048.
- Erdfelder, E and A. Buchner.1996. GPOWER: A general power analysis program.
- Ghozali,I. 2009. Aplikasi Analisis Multivariate dengan Program SPSS . Semarang.
- Gunawan and Iqbal. 2018. "Quality Measurement Customer Satisfaction Index (CSI) Method and Importance-Performance Analysis (IPA) Diagram PT. ASDP Indonesia Ferry (Persero) Merak-Banten," Journal of Engineering and Management in Industrial System, vol. 6, no. 1. doi: 10.21776
- Helia, C. P. Abdurrahman, and F. I. Rahmillah. 2018.
 Analysis of Customer Satisfaction in Hospital by Using Importance-Performance Analysis (IPA) and Customer Satisfaction Index (CSI). in MATEC Web of Conferences, EDP Sciences. doi: 10.1051/matecconf/201815401098.
- Hendi Prasetyo, "Urgensi Pengembangan Pariwisata Berkualitas," https://opini.harianjogja.com/read/2023/opiniurgensi-pengembangan-pariwisataberkualitas, 2023.
- Keputusan Mentri Pendayagunaan Apratur Negara. 2003. Pedoman Umum Penyelengaraan Pelayanan Publik.
- Martilla, JA ; John, and C. James. 1977. Importance-performance analysis.
- Marzuki, C. Armeroe, and Pipit Fitri Rahayu. 2020 Praktikum Statistik. Malang: Ahlimedia Press.
- Owen, Othman dan Lynn, Abdul, and Qawi. 2001."The Multi Dimensionality of CARTER Model to Measure Customer Service Quality (SQ) in Islamic Banking Industry," International Journal of Islamic Financial Service, vol. 3.
- Sabaruddin, R. Hakim, and A. Tata. 2024. CSI (Customer Satisfaction Index) and IPA (Importance Performance Analysis) of Speed Rum Harbort in Tidore Island City," East Asian

Journal of Multidisciplinary Research, vol. 2, no. 12, pp. 5245–5252, doi: 10.55927/eajmr.v2i12.7693.

- Supranto. 2006. Pengukuran Tingkat Kepuasan Pelanggan. JakartaRineka Cipta.
- Tirtawati, I. B. P. Negarayana, and N. K. I. Julianti. 2023. Indonesian Tourist Satisfaction towards GWK Cultural Park Using Importance-Performance Analysis (IPA) as a Tool to Determine Improvement Priorities," TRJ Tourism Research Journal, vol. 7, no. 2, p. 224. doi: 10.30647/trj.v7i2.235.
- Tjiptono, F. 2007. Pemasaran Jasa, Cetakan Ketiga. Bayu Media Publising.
- Widodo, SM and J. Sutopo. 2018. Metode Customer Satisfaction Index (CSI) Untuk Mengetahui Pola Kepuasan Pelanggan Pada E-Commerce Model Business to Customer.
- Zakaria, B. Ab. Rahman, A. K. Othman, N. A. M. Yunus, M. R. Dzulkipli, and M. A. F. Osman.2014. "The Relationship between Loyalty Program, Customer Satisfaction and Customer Loyalty in Retail Industry: A Case Study," Procedia Soc Behav Sci, vol. 129, pp. 23–30. doi: 10.1016/j.sbspro.2014.03.643.