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Visitor satisfaction at the Gunung Anyar Mangrove Resort, Surabaya: The mediating role of perceived value on service quality, tourist attractions, and infrastructure

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Abstrak

Indonesia memiliki hutan mangrove terluas di dunia. Kota Surabaya, selain menjadi pusat industri dan perdagangan juga memiliki potensi besar untuk pengembangan ekowisata dan dikenal memiliki kawasan ekowisata pesisir yang edukatif. Kebun Raya Mangrove Gunung Anyar, Surabaya, merupakan salah satu kawasan mangrove yang signifikan di Indonesia. Meningkatnya popularitas di KRM Gunung Anyar, Surabaya mengakibatkan adanya peningkatan jumlah pengunjung dan menjadi tantangan tersendiri dalam meningkatkan kualitas pelayanan, daya tarik wisata, dan infrastruktur terhadap kepuasan pengunjung dengan menjaga dan menstabilkan penilaian pengunjungnya. Penelitian ini bertujuan untuk menganalisis pengaruh kualitas pelayanan, daya tarik wisata, dan infrastruktur terhadap kepuasan pengunjung melalui *perceived value* sebagai mediasi. Penelitian ini menggunakan pendekatan deskriptif kuantitatif dengan sampel 150 responden dengan instrumen penelitian berupa kuesioner. Analisis data yang digunakan adalah SEM WarpPLS 8.0. Hasil penelitian menunjukkan bahwa kualitas pelayanan, dan daya tarik wisata memiliki pengaruh langsung terhadap kepuasan pengunjung melalui *perceived value* sebagai mediasi, sedangkan infrastruktur tidak memiliki pengaruh langsung. Adanya temuan ini menunjukkan pentingnya persepsi nilai oleh pengunjung dalam memenuhi kepuasan pengunjung yang secara berkelanjutan juga memperkuat daya saing KRM Gunung Anyar, Surabaya dengan destinasi wisata lainnya.

Kata kunci: Kualitas pelayanan, daya tarik wisata, infrastruktur, *perceived value*, kepuasan pengunjung

Abstract

Indonesia has the largest mangrove forest in the world. Surabaya City, in addition to being a center of industry and trade, also has great potential for ecotourism development and is known to have educational coastal ecotourism areas. Gunung Anyar Mangrove Botanical Garden, Surabaya, is one of the significant mangrove areas in Indonesia. The increasing popularity at KRM Gunung Anyar, Surabaya results in an increase in the number of visitors and is a challenge in itself in improving the quality of services, tourist attractions, and infrastructure to visitor satisfaction by maintaining and stabilizing visitor ratings. This study aims to analyze the effect of service quality, tourist attractions, and infrastructure on visitor satisfaction through perceived value as mediation. This research uses a quantitative descriptive approach with a sample of 150 respondents with a research instrument in the form of a questionnaire. The data analysis used is SEM WarpPLS 8.0. The results showed that service quality, and tourist attractions have a direct influence on visitor satisfaction through perceived value as mediation, while infrastructure has no direct influence. The existence of this finding shows the importance of perceived value by visitors in fulfilling visitor satisfaction which also sustainably strengthens the competitiveness of KRM Gunung Anyar, Surabaya with other tourist destinations.

Keywords: Service quality, tourism attraction, infrastructure, perceived value, visitor satisfaction

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Highlights

- Perceived value mediates the positive effects of service quality and tourist attractions on visitor satisfaction.
- Infrastructure has no direct effect on visitor satisfaction at Gunung Anyar Mangrove Resort.
- Enhancing perceived value is key to sustaining ecotourism competitiveness and visitor loyalty.

Introduction

Indonesia, endowed with abundant natural beauty, has great potential in developing sustainable tourism (Dasipah, 2023). Among various tourism models, ecotourism has emerged as a strategic approach to balance ecological, economic, and social benefits (Harahab, 2020). As a country with the largest mangrove forest in the world reaching 3.36 million hectares or about 24% of the total global mangrove area, Indonesia plays an important role in coastal ecosystem conservation (Nurfitriani et al., 2022).

In East Java, especially Surabaya City, besides being the center of industry and trade, it is also known to have educational coastal ecotourism areas (Kemen Lingkungan Hidup dan Kehutanan, 2020). One example is Gunung Anyar Mangrove Ecotourism, which is a real example of the potential of environmental tourism that develops in urban areas (Wahyono & Rahmawati, 2017). Developed since 2016, the area covers 25 hectares and offers an educational and recreational experience, supported by various facilities such as jogging trails, viewing towers, and picnic area (Salsabila & Eprilianto, 2024). Its designation as the first mangrove botanical garden in Indonesia adds to the ecological and tourism value of the area (Rudianto et al*.,* 2021).

However, the increasing number of visits also brings several challenges, particularly related to service quality, accessibility, and the overall visitor experience. Issues such as the lack of signage and staff guidance (Nurmala et al*.,* 2022), as well as inadequate infrastructure (for example, narrow access roads) (Anggraini, 2023), can reduce visitors' perceived value (Kim & Thapa, 2018) and ultimately affect their level of satisfaction (He et al., 2022). Although several studies have examined the influence of service quality, tourist attractions, and infrastructure on visitor satisfaction (Chen et al*.,* 2021), few have explored the role of perceived value defined as the comparison between the benefits and sacrifices perceived by visitors as a mediating variable (Saragih et al., 2022).

This study seeks to address the limited empirical understanding of how perceived value mediates the relationship between service quality, tourist attractions, and infrastructure in shaping visitor satisfaction within mangrove-based ecotourism settings. Despite extensive research on destination satisfaction, few studies have integrated these constructs simultaneously, particularly in the context of urban mangrove ecotourism. By employing Oliver, (1980) Expectancy Disconfirmation Theory (EDT) as the theoretical foundation, this research aims to bridge this gap by providing empirical evidence from Gunung Anyar Mangrove Ecotourism in Surabaya. The findings are expected to contribute to both theoretical enrichment in sustainable tourism behavior and practical strategies for improving visitor experiences in urban coastal ecotourism destinations.

Method

Time and location

The research was conducted from December 15, 2024 to January 31, 2025, in the Gunung Anyar Mangrove Botanical Garden, Surabaya, which is located on Jalan Medokan Sawah Timur Segoro Tambak Sedati, Medokan Ayu, Kec. Rungkut, Surabaya, East Java.

Research methods and sampling

This study uses a quantitative research approach, with the type of explanatory research using instruments or research tools in the form of questionnaires for data collection. The sample criteria in this study were all visitors to the Gunung Anyar Mangrove Botanical Garden, Surabaya. With the criteria of at least 17 years old, and at least one time visiting KRM Gunung

Anyar within one year. The number of samples used in this study amounted to 150 respondents, obtained from the number of indicators of 15 multiplied by 10 which was then increased to 160 to avoid invalid data. The sampling technique used was non-probability sampling with a purposive approach. Data collection for this study used a five-point Likert scale, namely strongly agree, agree, neutral, disagree, and strongly disagree which was carried out online via a google form distributed via WhatsApp and offline with a non-probability sampling method and incidental sampling type, namely sampling by chance based on visitors who were randomly encountered, but according to the criteria at the research location. This also benefits researchers to collect data quickly and efficiently (Andayani et al*.,* 2021).

Type and source of data

This research uses 2 types of data, namely primary and secondary data. Primary data is obtained through questionnaires, interviews, observation, and documentation. Secondary data is obtained from scientific journals, literature, and other sources.

Data analysis

The method used to analyze the data in this study is Structural Equation Modeling (SEM) with the WarpPLS tool (Hair et al*.,* 2019). WarpPLS was chosen because of its flexibility for large and small samples without many assumptions, but it is only able to handle missing values up to 15% of observations or 5% of indicators (Solimun et al*.,* 2017).

This research uses an explanatory method with a quantitative descriptive approach to describe phenomena and explore relationships between variables (Sugiyono, 2018). Data collection is carried out using a questionnaire instrument based on variable indicators, then processed to provide an overview of the relationship between variables, support understanding of phenomena, and produce conclusions that are easy to understand.

Results and discussion

Respondent profile

In this study the respondents used were visitors who came to Gunung Anyar Mangrove Ecotourism, Surabaya and had experienced firsthand how the quality of services, tourist attractions, and existing infrastructure influenced them in providing assessments and determining whether they were satisfied. The number of respondents in this study amounted to 150 which was based on several characteristics of respondents, namely gender, age, education, expenditure, income, frequency of visits, and location information.

Table 1. Respondent characteristics

Characteristics	Dominant Outcome	Number (People)	Percentage (%)
Gender	Female	85	56,7
Age	17 - 25 years old	61	40,7
Education	High School / Equivalent	75	50
Employment Type	Private Employee	59	39,3
Income	< Rp 2.000.000/month	69	46
Expenses	Rp 1.200.00 - Rp 6.000.000/month	78	52
Frequency of Visit	1 time	103	68,7
Location Information	Social Media	106	70,7

Source: Primary data processed, 2025

Based on Table 1, the distribution of respondents who visited Gunung Anyar Mangrove Ecotourism Surabaya, the majority of respondents were female as many as 85 people or 56.7% and were in the age range of 17-25 years as many as 61 people with a percentage of 40.7%. This finding shows that the young age group dominates the tourism activities studied. A total of 75 people or 50% of respondents had the latest high school / equivalent education level, while the dominant type of work was private employees of 59 people or 39.3%. This finding means that the majority of respondents come from the productive age group who have started working but are still in the early stages of their careers. A total of 69 respondents had an income of less than Rp 2,000,000 per month (46%). Although their travel expenditure is dominated in the range of Rp 1,200,000 to Rp 6,000,000 per month by 78 people (52%), this shows that despite their limited purchasing power, travel is still part of their lifestyle. A total of 103 people or 68.7% of respondents only visited tourist destinations once in the past year, indicating that most of them are not regular or periodic tourists in the Gunung Anyar Mangrove Botanical Garden area, Surabaya.

Validity test

The validity test of this research was carried out using WarpPLS 8.0 by testing 150 respondents to measure the level of accuracy and consistency. Validity test includes two main aspects, namely 1) convergent validity where a variable is said to meet convergent validity if it has a loading factor value> 0.3 (more than 0.3) and an Average Variance Extracted (AVE) value> 0.5 (more than 0.5), which indicates that more than 50% of the indicator variance can be explained by latent variables (Solimun et al., 2017). 2) Discriminant validity where an indicator is considered to meet discriminant validity if the loading factor value of each indicator item is greater than the cross loading value on other latent variables (Solimun et al., 2017).

Table 2. Discriminant validity for each indicator

	Variable	Indicator	*Loading Factor*	AVE	Description
X1	Service Quality	X1.1.1	(0.730)	0,788	Valid
		X1.1.2	(0.827)		Valid
		X1.2.1	(0.787)		Valid
		X1.2.2	(0.639)		Valid
		X1.3.1	(0.929)		Valid
X2	Tourism Attraction	X2.1.1	(0.830)	0,884	Valid
		X2.2.1	(0.897)		Valid
		X2.3.1	(0.922)		Valid
X3	Infrastructure	X3.1.1	(0.657)	0,725	Valid
		X3.1.2	(0.763)		Valid
		X3.2.1	(0.628)		Valid
		X3.2.2	(0.795)		Valid
		X3.3.1	(0.768)		Valid
Y1	*Perceived Value*	Y1.1.1	(0.852)	0,822	Valid
		Y1.1.2	(0.799)		Valid
		Y1.1.3	(0.771)		Valid
		Y1.2.1	(0.927)		Valid
		Y1.2.2	(0.767)		Valid
		Y1.3.1	(0.803)		Valid
		Y1.3.2	(0.821)		Valid
Y2	Visitor Satisfaction	Y2.1.1	(0.674)	0,767	Valid
		Y2.2.1	(0.848)		Valid
		Y2.3.1	(0.770)		Valid

Source: Primary data processed, 2025

The discriminant validity of the questionnaire in table 3 has met the requirements, where the value of the square root of Average Variance Extracted (Sqrts of AVEs) or the root of AVE must be greater than the correlation coefficient of other latent variables (Solimun et al*.,* 2017).

Table 3. Discriminant validity of questionnaire

Variable	KP (X1)	DT (X2)	IF (X3)	PV (Y1)	KSP (Y2)
KP (X1)	0,54375	0,51528	0,50556	0,53958	0,4625
DT (X2)	0,51528	0,54583	0,48333	0,48403	0,38819
IF (X3)	0,50556	0,48333	0,55556	0,46111	0,42083
PV (Y1)	0,53958	0,48403	0,46111	0,55625	0,47361
KSP (Y2)	0,4625	0,38819	0,42083	0,47361	0,57014

Source: Primary data processed, 2025

Description: KP (Service Quality), DT (Tourism Attraction), IF (Infrastructure), PV (Perceived Value), KSP (Visitor Satisfaction)

Reliability test

Reliability testing in WarpPLS analysis aims to assess the consistency of the instrument in measuring a variable stably and accurately through 2 main indicators, namely the Composite Reliability value and Croncbach's Alpha. A research instrument or questionnaire is considered reliable if it has a Composite Reliability value of more than 0.7 and Cronbach's Alpha above 0.6 (Solimun et al*.,* 2017). Table 4 shows the value of Composite Reliability and Cronbach's Alpha is reliable or fulfilled. The results of the analysis show that the composite reliability values for the service quality (KP) variable are 0.863, the tourist attraction (DT) variable is 0.829, the infrastructure (IF) variable is 0.842, the perceived value (PV) variable is 0.877, and the visitor satisfaction (KSP) variable is 0.861. All composite reliability values in the reliability test in this study have met the reliability requirements, which is > 0.7. In addition, there are Cronbach's alpha values for the service quality (KP) variable of 0.788, the tourist attraction (DT) variable of 0.690, the infrastructure (IF) variable of 0.718, the perceived value (PV) variable of 0.812, and the visitor satisfaction (KSP) variable of 0.757. All Cronbach's alpha values in this study meet the desired reliability standard, which is > 0.6. Thus, the reliability test results show that the composite reliability and Cronbach's alpha values in this study meet the reliability test criteria.

Table 4. Reliability test

Variabel	*Cronbach's Alpha*	*Composite Reliability*
Service Quality (KP)	0,863	0,788
Tourism Attraction (DT)	0,829	0,690
Infrastructure (IF)	0,842	0,718
Perceived Value (PV)	0,877	0,812
Visitor Satisfaction (KSP)	0,861	0,757

Source: Primary data processed, 2025

Description: KP (Service Quality), DT (Tourism Attraction), IF (Infrastructure), PV (Perceived Value), KSP (Visitor Satisfaction)

Model fit dan quality indices

Based on model fit and quality indices testing (Table 5), it is known that the results of this study can be said to be good, ideal, large, and accepted. This means that all test indices in

the model fit and quality indices tests in this study have met the criteria. Based on the results of the structural model test in the table above, it can be seen that the model fit and quality indices criteria in this study have been met, as indicated by the APC, ARS, and AARS values with a P-value < 0.001, which is significant. The AVIF value of 2.790 meets the criteria of less than 3.3. The AFVIF value of 2.805 meets the criteria of less than 3.3. The GoF value of 0.623 is in the large category. The SPR, RSCR, SSR, and NLBCDR values of 1.000 indicate ideal values. The model in this study does not contain any collinearity issues between variables, meaning that the relationship between variables is stable and free from multicollinearity distortion (the variables in the study do not overlap or imitate each other excessively), making it suitable for further SEM structural analysis.

Table 5. Model fit and quality indices

Model fit and quality indices	Fit Criteria	Analysis	Result
Average path coefficient (APC)	*P-value < 0,05*	0.248 (P<0.001)	Significant
Average R-squared (ARS)	*P-value < 0,05*	0.609 (P<0.001)	Significant
Average adjusted R-squared (AARS)	*P-value < 0,05*	0.599 (P<0.001)	Significant
Average block VIF (AVIF)	acceptable if <= 5, ideally <= 3.3	2.790	Ideal
Average full collinearity VIF (AFVIF)	acceptable if <= 5, ideally <= 3.3	2.805	Ideal
Tenenhaus GoF (GoF)	small >= 0.1, medium >= 0.25, large >= 0.36	0.623	Large
Simpson's paradox ratio (SPR)	acceptable if >= 0.7, ideally = 1	1.000	Ideal
R-squared contribution ratio (RSCR)	acceptable if >= 0.9, ideally = 1	1.000	Ideal
Statistical suppression ratio (SSR)	acceptable if >= 0.7	1.000	Ideal
Nonlinear bivariate causality direction ratio (NLBCDR)	acceptable if >= 0.7	1.000	Ideal

Source: Primary data processed, 2025

R-Squared

Obtained 2 results of the R-Squared value (Table 6) which shows a moderate value, namely the R-Squared Perceived Value value of 0.647 which means that the KP, DT, and IF variables are able to explain about 64.7% of the variation in PV and the remaining 35.3% is explained by other variables outside the research model or error. The second value is R-Squared Visitor Satisfaction: 0.571, which means that the variables KP, DT, IF, and PV are able to explain about 57.1% of the variation in KSP and the remaining 42.9% is explained by other variables outside the research model or error.

Table 6. R- Squared

No	Variable	R^2	Interpretation
1	*Perceived Value* (Y1)	0.647	Moderat/Medium
2	Visitor Satisfaction (Y2)	0.571	Moderat/Medium

Source: Primary data processed, 2025Description: KP (Service Quality), DT (Tourism Attraction), IF (Infrastructure), PV (Perceived Value), KSP (Visitor Satisfaction)

Hypothesis test

This study conducted hypothesis testing by looking at each variable at the p-value as the basis for determining the decision. The terms of the p-value value in the hypothesis testing decision are divided into 3, namely highly significant if the p-value ≤ 0.01 (α = 1%), if the p-value ≤ 0.05 (α = 5%) is said to be significant, and the p-value ≤ 0.10 (α = 10%) is said to be weakly significant (Solimun *et al.,* 2017). The following is a model of research results that have been processed using the WarpPLS 8.0 application (Figure 1).

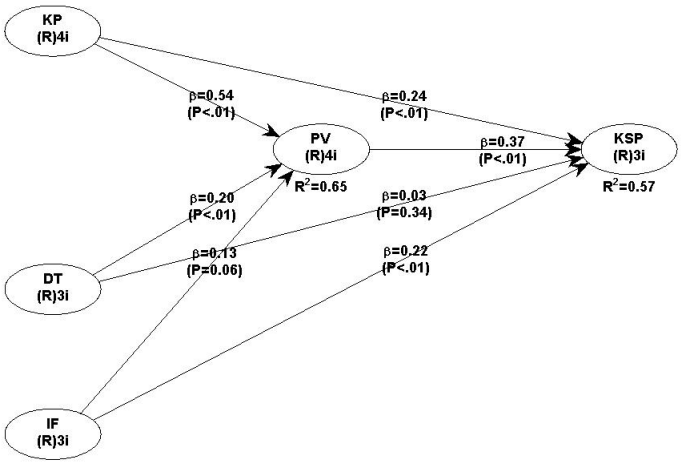

Figure 1: Research outcome model (Source: Primary data processed, 2025)

From the research results model above, it can be seen that there are 10 hypotheses in which there are direct and indirect effects. Where the direct path assesses the influence of exogenous variables on endogenous variables, while the indirect path assesses the influence of mediating variables. In this case, the mediating variable acts as an intermediate variable that connects the explanatory variable with the response variable (Table 7).

Table 7. Hypothesis testing results

Hypothesis	Path	Path Coefficient	*P-Value*	Hypothesis Description
1	KP → PV	0.540	<0.001	Accepted
2	DT → PV	0.200	0.006	Accepted
3	IF → PV	0.126	0.057	Accepted
4	KP → KSP	0.244	<0.001	Accepted
5	DT → KSP	0.033	0.343	Rejected
6	IF → KSP	0.218	0.003	Accepted
7	PV → KSP	0.373	<0.001	Accepted
8	KP → PV → KSP	0.201	<0.001	Accepted
9	DT → PV → KSP	0.074	0.096	Accepted
10	IF → PV → KSP	0.047	0.206	Rejected

Source: Primary data processed, 2025
Description: KP (Service Quality), DT (Tourism Attraction), IF (Infrastructure), PV (Perceived Value), KSP (Visitor Satisfaction)

In the analysis above, the results of testing 8 hypotheses are accepted, 2 hypotheses are rejected, namely the effect of tourist attractions on visitor satisfaction and the effect of infrastructure on visitor satisfaction mediated by perceived value. The interpretation of the results of hypothesis testing is explained as follows:

The effect of service quality on perceived value (H1)

The results of the analysis using WarpPLS 8.0 show that service quality (KP) has a positive and significant effect on perceived value (PV), as indicated by the p-value <0.001, which is categorized as highly significant. In addition, the path coefficient of 0.540 confirms the existence of a strong direct relationship between service quality (KP) and perceived value (PV). Thus, this finding supports hypothesis 1 (H1) which states that improving service quality contributes to increasing perceived value or visitor perceptions at Gunung Anyar Mangrove Botanical Garden, Surabaya. Optimal service quality, such as friendliness, responsiveness, and providing comprehensive information, plays a significant role in enhancing a more memorable, authentic, and sustainable tourist experience. The results of this study expand on the findings of previous research conducted by He *et al.,* (2022) which reveal that high service quality from destination employees has a positive impact on tourists' perceived value. When visitors get superior service, they tend to have a more positive perception of the tourist destination.

The effect of tourism attraction on perceived value (H2)

The results of the analysis using WarpPLS 8.0 show that tourist attraction (DT) has a positive and significant influence on perceived value (PV), as indicated by the p-value of 0.006, which is included in the significant category. In addition, the path coefficient value of 0.200 indicates a direct relationship between tourist attraction (DT) and perceived value (PV). Thus, these results support hypothesis 2 (H2), which states that increasing tourist attractiveness contributes to increasing the perceived value of visitors to the Gunung Anyar Mangrove Botanical Garden, Surabaya. The tourist attractions offered include natural beauty, complete supporting facilities, the uniqueness of the mangrove ecosystem, and educational experiences that further enrich the visitor experience. This strengthens their perceived value of tourist destinations, which in turn can have an impact on visitor loyalty and ecotourism sustainability. The results of this study expand on the findings of previous research conducted by Denada *et al.,* (2020) which highlight that tourist attractions play an important role in shaping visitors'

perceived value. When the attractiveness of a destination is well managed, the perceived value of visitors to the place increases significantly.

The effect of infrastructure on perceived value (H3)

The results of the WarpPLS 8.0 analysis show that the infrastructure variable (IF) has a significant relationship and a positive effect on perceived value (PV) as indicated by a p-value of 0.057 and is categorized as significant, so it can be concluded that hypothesis 3 (H3) is accepted. The path coefficient value of 0.126 indicates a direct relationship between infrastructure (IF) and perceived value (PV). Thus, these results support hypothesis 3 (H3), which states that the existence of infrastructure such as various access roads, public facilities and supporting facilities along with the condition of existing facilities can increase the perceived value of visitors to the Gunung Anyar Mangrove Botanical Garden, Surabaya. The availability of public facilities and supporting facilities is important to fulfill visitor perceptions because this also supports the comfort of visitors who come to the destination. Therefore, it is also necessary to pay attention to the condition of the various accesses and facilities provided to support comfort and strengthen the perceived value of visitors. The results of this study expand on the findings of previous research conducted by Kanwal *et al.,* (2020)which shows that the development of road and transportation infrastructure can create positive perceptions both in the community and visitors about the benefits of tourism.

The effect of service quality on visitor satisfaction (H4)

The results of the analysis using WarpPLS 8.0, found that the service quality variable (KP) has a significant effect on visitor satisfaction (KSP) with a path coefficient value of 0.244 and a p-value <0.001, which shows the level of significance. Thus, Hypothesis 4 (H4) is accepted. A positive service experience encourages visitors to feel satisfied and comfortable, which in turn increases the likelihood of repeat visits which is good for the sustainability of the Mangrove Botanical Garden, Surabaya. The results of this study expand on the findings of previous research conducted by Shyju et al*.,* (2023) which states that service quality has a significant effect on visitor satisfaction. This study extends these findings by applying the same concept to ecotourism-based attractions.

The effect of tourism attractions on visitor satisfaction (H5)

The results of the analysis using WarpPLS 8.0, found that the tourist attraction variable (DT) does not have a significant influence on visitor satisfaction (KSP), as indicated by a p-value of 0.343, which is above the significance threshold. Thus, these results indicate that hypothesis 5 (H5) cannot be accepted. However, the path coefficient value of 0.033 still indicates a positive relationship direction although it is not strong enough to be considered statistically significant. These findings have resulted in new concepts, and previous findings still apply based on the results of research conducted by Nurmala et al., (2022) which shows that tourist facilities, tourist attractions, and service quality have a significant effect on visitor satisfaction. In this case, it is very important for tourism managers to continue to make improvements to existing tourist attractions both by adding more interactive and educational attractions, as well as maintaining and continuing to innovate existing tourist attractions to continue to attract visitors on an ongoing basis.

The effect of infrastructure on visitor satisfaction (H6)

The results of the WarpPLS 8.0 analysis show that the infrastructure variable (IF) has a significant relationship and a positive effect on visitor satisfaction (KSP) as indicated by a p-value of 0.003 and is categorized as significant, so it can be concluded that hypothesis 6 (H6) is accepted. The path coefficient value of 0.218 indicates a direct relationship between

infrastructure (IF) and visitor satisfaction (KSP). Existing infrastructure such as various public and supporting facilities, existing access and conditions show effectiveness as a strategy in increasing visitor satisfaction at Gunung Anyar Mangrove Botanical Garden, Surabaya. The results of this study are finding expands on the results of research conducted by Kanwal et al., (2020) which shows that tourist facilities, tourist attractions, and service quality have a significant effect on visitor satisfaction.

The effect of perceived value on visitor satisfaction (H7)

The results of the analysis using WarpPLS 8.0, found that the perceived value (PV) variable has a significant relationship and a positive effect on visitor satisfaction (KSP). This is indicated by the p-value <0.001, which is below the significance threshold, so hypothesis 7 (H7) can be accepted. In addition, the path coefficient value of 0.373 indicates a direct relationship between perceived value (PV) and visitor satisfaction (KSP) which indicates that the higher the value perceived by visitors, the greater their level of satisfaction with tourist destinations. The results of this study are finding expands on the results of research conducted by Suhartanto et al., (2020) which found that perceived value has a significant influence on tourist experience and tourist satisfaction, which in turn has an impact on destination loyalty and environmentally responsible behavior.

The effect of service quality on visitor satisfaction with perceived value as mediation (H8)

The results of the analysis using WarpPLS 8.0, found that the service quality variable (KP) has a significant relationship and a positive effect on visitor satisfaction (KSP) through the mediation of perceived value (PV). This is indicated by the p-value <0.001, which is below the significance threshold, so hypothesis 8 (H8) can be accepted. In addition, the path coefficient value of 0.201 indicates a direct relationship between service quality (KP) and visitor satisfaction (KSP) through perceived value (PV). This finding expands on the results of research conducted by Sugiarto & Utari (2024) which shows that good service quality can increase visitor satisfaction, especially if the value they receive is comparable or exceeds their expectations.

The effect of tourism attractions on visitor satisfaction with perceived value as mediation (H9)

The results of the analysis using WarpPLS 8.0, found that the tourist attraction variable (DT) has a significant relationship and a positive effect on visitor satisfaction (KSP) through the mediation of perceived value (PV). This is indicated by the p-value of 0.096, which meets the significance limit, so hypothesis 9 (H9) can be accepted. In addition, the path coefficient value of 0.074 indicates a direct relationship between tourist attraction (DT) and visitor satisfaction (KSP) through the mediation of perceived value (PV). Tourist attractions not only have a direct impact on visitor satisfaction, but also indirectly through increased perceived value. The results of this study modify the two previous studies. This study modifies and expands on the concepts from the two previous studies by Nurmala *et al.,* (2022) and Denada *et al.,* (2020) which show that tourist attraction has a significant influence on visitor satisfaction, are in line with the results obtained in this study. In addition, this study is also based on the findings of (Denada *et al.,* 2020) which found that tourist attractions have a significant effect on perceived value, which also supports the results in this study.

The effect of infrastructure on visitor satisfaction with perceived value as mediation (H10)

The results of the analysis using WarpPLS 8.0, found that the infrastructure variable (IF) does not have a significant relationship with visitor satisfaction (KSP) through the mediation

of perceived value (PV). This is indicated by the p-value of 0.206, which is above the significance threshold, so hypothesis 10 (H10) cannot be accepted. Nevertheless, the path coefficient value of 0.047 still indicates a direct relationship between infrastructure (IF) and visitor satisfaction (KSP) through perceived value (PV), although it is not statistically strong enough to be considered significant. The results of this study produced new concepts, and previous findings still apply of Kanwal *et al.,* (2020) that the development of road and transportation infrastructure contributes to increasing the benefits perceived by visitors, which in turn can increase the local community's satisfaction with the development of the tourism sector.

Effectiveness priority

There are two direct effects and indirect effects. The test results of the indirect effect, direct effect, total effect and priority of the effectiveness of the influence between variables can be seen in more detail, as follows:

Table 8. Effectiveness Priority

Variable Type			*Direct Effect*	*Indirect Effect*	*Total Effect*	Priority Effectiveness Influence on	
P	M	R	*β (P-Value)*	*β (P-Value)*	*β (P-Value)*	PV	KSP
KP	-	PV	0.540 (<0.001)	-	0.540 (<0.001)	1	-
DT	-	PV	0.200 (0.006)	-	0.200 (0.006)	2	-
IF	-	PV	0.126 (0.057)	-	0.126 (0.057)	3	-
PV	-	KSP	0.373 (<0.001)	-	0.373 (<0.001)	-	2
KP	- PV	KSP	0.244 (<0.001)	0.201 (<0.001)	0.445 (<0.001)	-	1
DT	- PV	KSP	0.033 (0.343)	0.074 (0.096)	0.107 (0.090)	-	4
IF	- PV	KSP	0.218 (0.003)	0.047 (0.206)	0.265 (<0.001)	-	3

Source: Primary data processed, 2025

Description: KP (Service Quality), DT (Tourism Attraction), IF (Infrastructure), PV (Perceived Value), KSP (Visitor Satisfaction)

The analysis shows that among the three predictors of perceived value, service quality has the strongest effect ($\beta = 0.540$, $p < 0.001$), followed by tourist attraction ($\beta = 0.200$, $p = 0.006$), and infrastructure ($\beta = 0.126$, $p=0.057$). Regarding visitor satisfaction, the most influential factor is service quality mediated by perceived value ($\beta = 0.445$, $p < 0.001$), followed by perceived value itself ($\beta = 0.373$, $p <0.001$), infrastructure via perceived value ($\beta = 0.265$, $p < 0.001$), and finally tourist attraction via perceived value ($\beta = 0.107$, $p = 0.090$). These

results indicate that service quality plays the most dominant role in shaping both perceived value and visitor satisfaction.

Conclusion

This study concludes that service quality, tourist attraction, and infrastructure positively and significantly influence perceived value at Gunung Anyar Mangrove Ecotourism, Surabaya. Service quality and infrastructure also have a significant positive impact on visitor satisfaction, while tourist attraction does not directly enhance satisfaction. However, perceived value effectively mediates the relationships between service quality, tourist attraction, and visitor satisfaction, indicating that visitors perceived value plays a crucial role in shaping overall satisfaction. These findings confirm that perceived value serves as an important mechanism linking service quality, attractions, and infrastructure to visitor satisfaction, thereby supporting the study's objective to understand the key drivers of satisfaction in mangrove ecotourism settings.

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