



Community Satisfaction Analysis in Mangrove Forests Management in the Unit X KPHL Batu Bara Using Importance Performance Analysis

Analisis Kepuasan Masyarakat dalam Pengelolaan Hutan Mangrove pada Unit X KPHL Batu Bara menggunakan Importance Performance Analysis

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ABSTRACT

Sustainable forest management encompasses a holistic approach that considers forests' ecological, social, and economic functions. However, an increasing focus on economic functions often leads to the neglect of social and ecological aspects. Consequently, it is essential to evaluate community satisfaction regarding the service performance of forest management units (FMUs). This research aimed to assess community satisfaction with the service performance of Unit X KPHL Batu Bara, which oversees coastal forests primarily comprised of mangrove ecosystems in the coastal regions of Batu Bara Regency, North Sumatra, utilizing Importance Performance Analysis (IPA). The findings revealed that the service performance of Unit X KPHL Batu Bara falls short of community expectations, as indicated by a negative average gap score of -0.716 between service performance and expectations. The categories of assurance and tangibles exhibited the highest gap scores. Therefore, Unit X KPHL Batu Bara must enhance their service quality for the local communities.

INTISARI

Pengelolaan hutan lestari dilakukan dengan menggunakan pendekatan fungsi hutan yang meliputi fungsi ekologis, sosial, dan ekonomi. Namun demikian, meningkatnya prioritas pada fungsi ekonomi hutan mengakibatkan kurang diperhatikannya fungsi sosial dan ekologi hutan. Untuk itu, perlu dilakukan penilaian kepuasan masyarakat terhadap pengelolaan hutan yang dilakukan oleh Unit Manajemen Hutan. Penelitian ini bertujuan untuk mengevaluasi kepuasan masyarakat terhadap kinerja Unit X KPHL Batu Bara yang mengelola hutan pantai yang didominasi oleh ekosistem mangrove di pesisir Kabupaten Batu Bara, Sumatera Utara dengan menggunakan Importance Performance Analysis (IPA). Hasil analisis menunjukkan bahwa kinerja pelayanan di Unit X KPHL Batu Bara belum memenuhi harapan masyarakat. Hal ini terlihat dari perbedaan skor rata-rata pelayanan kinerja dan skor rata-rata harapan, yang menghasilkan skor rata-rata kesenjangan negatif (-0,716). Faktor jaminan (assurance) dan bukti fisik (tangible) merupakan faktor dengan perbedaan skor terbesar antara kinerja dan harapan. Unit X KPHL Batu Bara perlu meningkatkan kualitas layanan yang diberikan kepada masyarakat.

Introduction

Sustainable forest management is implemented through a forest function approach, viewing forests as vital resources that support life and development. This approach encompasses ecological functions, highlighting forests as life support systems for diverse flora and fauna while preserving ecosystems and the various species that inhabit them (Ardhana 2016). It further incorporates social functions that illustrate the relationship between forests and cultural, ethical, and societal norms, contributing to sustainable development in forest management (Adiarsa 2018). Additionally, economic functions play a crucial role in societal and national development (Rimba Indonesia 2020). However, the increasing emphasis on the economic role of forests has led to a need for more attention to their social and ecological functions. Therefore, forest management is needed as a continuous effort in the process of sustainable development in an effort to improve the welfare of society (Arifandi & Sihalohe 2015) especially in coastal regions Batu Bara Regency, home to forests along its coastline, is characterized predominantly by mangrove ecosystems (UPT KPH Region II Pematang Siantar 2018). Unfortunately, the forest cover within these Batu Bara Regency Forest areas has undergone significant changes in function and designation. Strengthening the institutional capacity of Forest Management Units (KPH) is one of the efforts to enhance the management of forest resources within the forestry sector (Kementerian Lingkungan Hidup dan Kehutanan Republik Indonesia 2021). The development of these KPHs aims to improve forest governance and achieve sustainable forest management. The forests in Batu Bara Regency become part of the managed area of Unit X KPHL (Protected Forest Management Unit) Batu Bara, which falls under the jurisdiction of UPT KPH Region II Pematang Siantar (UPT KPH Region II Pematang Siantar 2018).

Due to the relatively small size of the forest compared to other KPH units, forest management in Unit X KPHL Batu Bara is not operating at optimal levels and faces several challenges. These challenges include coordination, services, facilities, infrastructure, and insufficient personnel. Therefore, it is essential to assess the level of community satisfaction

with the performance of Unit X KPHL Batu Bara by utilizing Importance Performance Analysis (IPA). IPA aims to identify the gap between the performance of forest management and the community's expectations regarding this performance using a questionnaire to evaluate service quality performance at Unit X KPHL Batu Bara. This research used a Likert scale for respondents' answers, which were subsequently analyzed to determine the level of alignment and plotted in a Cartesian diagram. Understanding the community's satisfaction level regarding the performance of forest services and management at Unit X KPHL Batu Bara will facilitate improvements in the effectiveness and efficiency of KPH.

Materials and Methods

The research was conducted from December 2022 to March 2023 at a location in the managed area of Unit X KPHL Batu Bara. The tools and materials used for data collection included stationery, recording equipment, cameras for documentation, laptops/computers, printers, questionnaires, and other documents/data related to forest management in Unit X KPHL Batu Bara (Figure 1).

Data Collection

This research gathered primary and secondary data and additional supporting information. This research collected primary data by conducting a forest area development and vegetation analysis in mangrove-dominated forest regions within the managed area of Unit X KPHL Batu Bara and derived community satisfaction data from interviews with respondents selected through purposive sampling. This approach involves careful and deliberate sample selection and ensures that the selected respondents can provide valuable insights for the research and facilitate the research (Bashar et al. 2019) based on their knowledge (Handayani et al. 2022) on forest management in Unit X KPHL Batu Bara. As Syahputra (2018) noted, larger sample sizes tend to be more advantageous, with a minimum of 30 samples recommended. Ultimately, this research has chosen 40 respondents to represent government agencies (specifically the Batu Bara Regency Government),

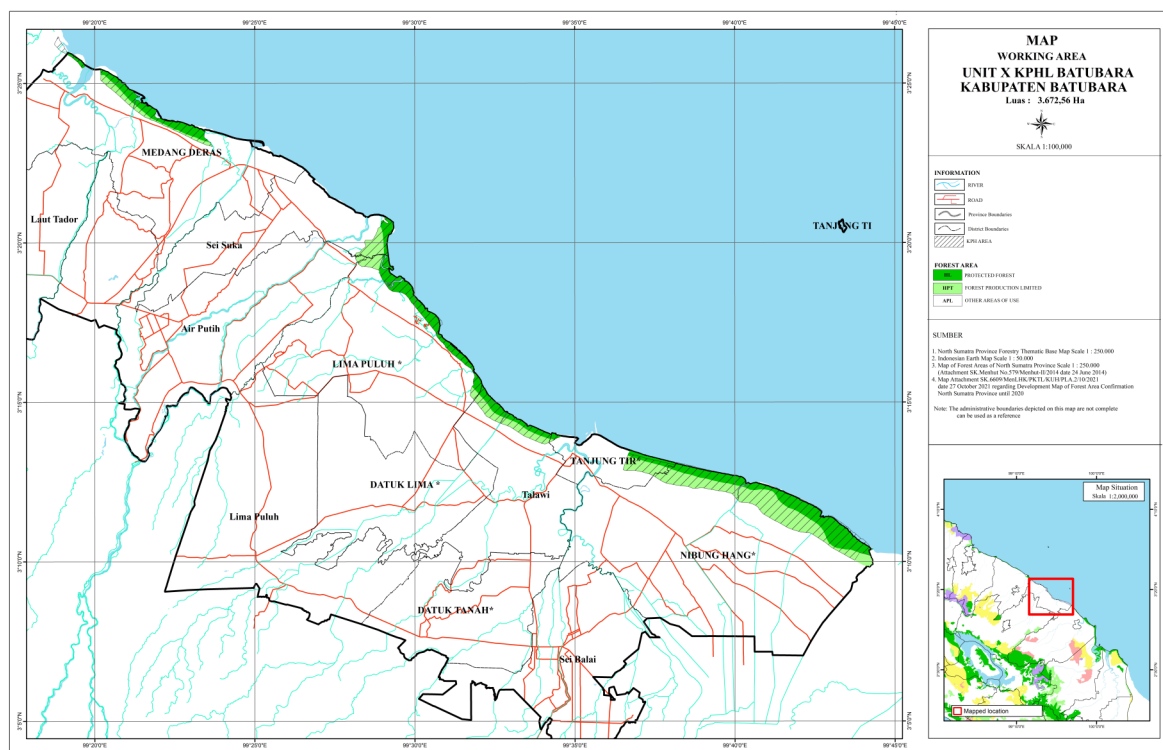


Figure 1. Working Area Map of Unit X KPHL Batu Bara (source: map analysis using ArcGIS 10.8)

Table 1. Characteristics of Respondents

Gender		Number of Respondents with Last Education Level					Age of Respondents (Year)			
M	F	SD	SMP	SMA	S1	S2	20-30	31-40	41-50	50 up
32	8	1	1	14	16	8	3	12	19	6
80%	20%	3%	3%	35%	40%	20%	8%	30%	48%	15%

Remarks: M=Male, F=Female, SD=Elementary School, SMP=Secondary School, SMA=High School, S1=Bachelor Degree, S2=Master Degree.

Table 2. Likert scale in Importance Performance Analysis (IPA)

Score	Importance Scale	Level of Satisfaction/Performance Assessment
5	Very important	Very satisfied
4	Important	Satisfied
3	Quite important	Quite satisfied
2	Less important	Less satisfied
1	Not important	Not satisfied

Source: Hermawan (2016)

local communities near the forest area, and stakeholders who have engaged with KPHL Unit X KPHL Batu Bara. The respondents were 80% (32) male and 20% (8) female. Meanwhile, 16(40%) respondents had a bachelor's degree, and 14 (35%) completed high school. Based on age, most respondents (48%) were in the 41-50 age range, and 30% were in the 31-40 age range (30%), as summarized in Table 1.

Data Analysis

Participants responded to a questionnaire that comprised five key elements: Tangibility, Reliability,

Responsiveness, Assurance, and Empathy. This research evaluated their satisfaction with the service quality of KPHL Unit X Batu Bara, utilizing a questionnaire that featured answer options on a Likert scale (refer to Table 2). The average score from respondents' evaluations of each question determined community satisfaction, which was subsequently analyzed using IPA analysis.

The IPA analysis used two calculations to find the gaps between KPHL Unit X Batu Bara's service performance and community expectations.

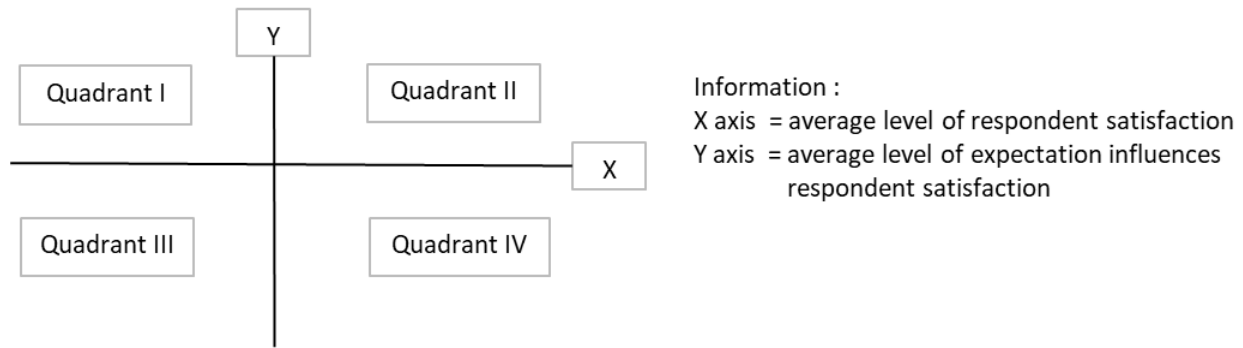


Figure 2. Cartesian Diagram of Importance Performance Analysis (IPA)

1. Conformity Analysis

Conformity analysis was done by dividing the respondents' scores for services performed by the KPHL Unit X Batu Bara and the scores for expectations for each statement (factor) using the following formula.

$$Tki = \frac{\sum Xi}{\sum Yi} \times 100\%$$

Information:

- Tki = Respondent satisfaction level
 $\sum Xi$ = Respondents' scores for services performed by KPHL Unit X Batu Bara
 $\sum Yi$ = Respondent's expectation score

2. Satisfaction Level Division in Cartesian Diagrams

There were four quadrants in the Cartesian diagram bound by two perpendicular intersecting lines at the origin point (0,0), with the average level of respondent satisfaction (Tki) marked by line X and the average expectation score or level of importance that influences satisfaction ($\sum Yi$) among respondents marked by the Y line (Figure 2). In the Cartesian Diagram, Quadrant I indicated high expectations and low satisfaction, while Quadrant II showed high expectations and satisfaction. Quadrant III indicated low expectations and satisfaction, while Quadrant IV showed low expectations and high satisfaction.

Results and Discussion

Unit X KPHL Batu Bara must establish a specific goal and implement effective strategies. These goals and strategies should consider the available natural and human resources within Unit X KPHL Batu Bara. The implementation of effective sustainable forest

management is highly dependent on the implementation of sustainable forestry management (Marchi et al. 2018). Moreover, maintaining ecological, economic, and socio-cultural sustainability in forest management benefits all stakeholders involved. The IPA results showed that the average score of community satisfaction and importance levels were 3.51 and 4.22, respectively (Table 3 and Figure 3). The IPA indicated that the quality of service at Unit X KPHL Batu Bara was far from community expectations, indicated by the gap difference between the average performance score (4.22) and the average expectation score (3.51), which produced a negative average gap score (-0.71). The assurance and physical evidence (tangibility) had the highest gap values of -0.93 and -0.71, respectively. Meanwhile, the responsiveness dimension had the lowest gap of -0.58 (Table 3). Hermawan (2016) stated that this may be due to a mismatch between the perceived service performance and expectations of the service.

The Cartesian diagram identified three factors in Quadrant I, six in Quadrant II, four in Quadrant III, and four in Quadrant IV (see Figure 3), as described in Table 4. Quadrant II highlighted the community's satisfaction with the forest management performance of Unit X KPHL Batu Bara, which was deemed highly significant. The physical evidence (tangibility) included a comfortable space for coordination and consultation, comprehensive data related to forest areas, easy access to the Unit X KPHL office, a reliability factor demonstrated by the timely delivery of information regarding forest areas and management, as well as an empathy factor reflected in the patience and politeness of employees when providing necessary information to the community.

Table 3. Results of assessing the level of community satisfaction

No.	Indicators/factors	Level of Community Satisfaction	Level of Importance (Performance)	Conformity Rate (%)	Gap Score
<i>Tangible</i>					
1	Facilities and physical condition of the service office building	3.60	4.10	87.80	- 0.50
2	Comfortable space for coordination and consultation	3.63	4.35	83.33	- 0.73
3	Data related to complete forest areas	3.53	4.43	79.66	- 0.90
4	Facilities and infrastructure support the implementation of forest area management activities	3.20	4.25	75.29	-1.05
5	Affordable Unit X KPHL Batu Bara office	3.98	4.33	91.91	- 0.35
Average of tangible		3.59	4.29	83.60	- 0.71
<i>Reliability</i>					
6	Ease of obtaining information related to forest areas and forest management	3.58	4.18	85.63	- 0.60
7	Speed in obtaining information related to forest areas and forest management	3.53	4.28	82.46	- 0.75
8	Conformity between the services received by the community and service standards	3.45	4.10	84.15	- 0.65
9	Availability of information about forest areas and forest management	3.48	4.20	82.74	- 0.73
Average of reliability		3.51	4.19	83.74	- 0.68
<i>Responsiveness</i>					
10	The ability of employees to be quick and responsive to public complaints	3.58	4.15	86.14	- 0.58
11	Employees are quick to provide the information the public needs	3.53	4.03	87.58	- 0.50
12	Speed of Public Services	3.45	4.10	84.15	- 0.65
Average of responsiveness		3.52	4.09	85.96	- 0.58
<i>Assurance</i>					
13	Community data that comes for coordination and consultation is safe	3.33	4.15	80.12	- 0.83
14	Availability of procedures for complaints and suggestions	3.23	4.25	75.88	- 1.03
15	Ease of understanding the complaint mechanism	3.43	4.38	78.29	- 0.95
Average of assurance		3.33	4.26	78.10	- 0.93
<i>Empathy</i>					
16	Employees are patient in providing the information the public needs	3.68	4.23	86.98	- 0.55
17	Employees are polite in providing information that the public needs	3.53	4.30	81.98	- 0.78
Average of empathy		3.60	4.26	84.48	- 0.66
<i>Total average</i>		3.51	4.22	83.14	-0.71

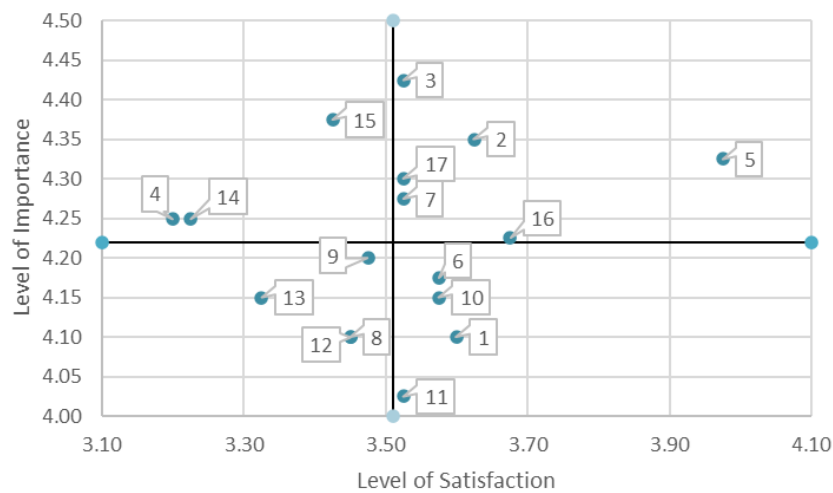


Figure 3. The Distribution of Importance Performance Analysis (IPA) Results in Cartesian Diagram

Table 4. Summary of Importance Performance Analysis (IPA)

Quadrant	Information	Code	Internal factors
I	Concentrate here: high level of importance, low satisfaction	4	Facilities and infrastructure support the implementation of forest area management activities
		14	Availability of procedures for complaints and suggestions
		15	Ease of understanding the complaint mechanism
II	Keep up the good work: satisfaction with performance and high level of interest	2	Comfortable space for coordination and consultation
		3	Data related to complete forest areas
		5	Affordable Unit X KPHL Batu Bara office
		7	Speed in obtaining information related to forest areas and forest management
		16	Patient employees provide the information the public needs
III	Low priority: performance is low, but the customer does not consider the problem to be very important	17	Polite employees provide the information the public needs
		8	Conformity between the services received by the community and service standards
		9	Availability of information about forest areas and forest management
		12	Speed of Public Services
IV	Possible overkill: satisfaction is high but performance is not that important	13	Community data that comes for coordination and consultation is safe
		1	Facilities and physical condition of the service office building
		6	Ease of obtaining information related to forest areas and forest management
		10	The ability of employees to be quick and responsive to public complaints
		11	Employees are quick to provide the information the public needs

The community highly valued and was satisfied with the performance of Unit X KPHL Batu Bara, underscoring the importance of sustaining these six identified factors in Quadrant II.

The primary recommendations for improving forest management services in Unit X KPHL Batu Bara focus on increasing community satisfaction concerning service quality (Quadrant I). Quadrant I indicated that the factors were highly important but needed to meet the community's expectations. These include tangible aspects such as the facilities and infrastructure that support forest land management activities, reliability factors like the availability of procedures for lodging complaints and suggestions, and the clarity of the complaint mechanisms. According to Hermawan et al. (2016), individuals prioritized physical evidence over qualitative aspects of services. While facilities and infrastructure were crucial for effective forest management in Unit X KPHL Batu Bara, the community believed improvements were necessary for the infrastructure supporting forest area management activities. Unit X KPHL Batu Bara must be able to improve the quality of services provided by building the infrastructure

necessary to support forest management.

Additionally, the community expressed concerns over the inadequacy of the complaint mechanism, which is fundamentally crucial for enhancing performance. This deficiency stemmed from a shortage of human resources in Unit X KPHL Batu Bara. With only three employees available, there were challenges in effectively managing the community's complaints. The community often needs help to reach the Unit X KPHL Batu Bara staff, as those employees are frequently engaged in patrols or coordinating with other agencies and institutions. Implementing a complaint box and providing a dedicated telephone number at the Unit X KPHL Batu Bara office could significantly improve the complaint-handling process. In addition to recruiting new staff, offering training to current employees could enhance job satisfaction and the quality of public service (Hermawan et al. 2016). The IPA has identified key areas that require priority attention for improvement or mitigation (Shia et al. 2016) through a quadrant analysis.

Conclusion

In conclusion, the IPA indicated that the quality of service at Unit X KPHL Batu Bara fell significantly short of community expectations, evidenced by the disparity between the average performance score (4.22) and the average expectation score (3.51), resulting in a negative average gap score of -0.71. The assurance and physical evidence (tangibility) exhibited the most substantial gap values, at -0.93 and -0.71, respectively. Conversely, the responsiveness dimension recorded the tiniest gap at -0.58. To enhance community satisfaction, Unit X KPHL Batu Bara must focus on improving the tangible and assurance factors highlighted in Quadrant I. Additionally, the IPA results for Unit X KPHL Batu Bara reveal a need for strategies to enhance overall service performance.

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