

Ecotourism in Goa: An Empirical Investigation of Tourist Perception and Experiences

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Abstract

Tourism is essential for the economic progression of a nation. Goa, the smallest state in India, is a popular tourist destination attracting numerous domestic and international visitors. Goa is endowed with diverse natural landscapes and also hosts a range of heritage sites. The state is endorsed as a coastline tourism hub that has reached its peak (Kamat, 2013). Consequently, it is essential to develop supplementary tourism sectors. The current research work scrutinizes ecotourism in Goa. Gap analysis was used, which was conducted grounded on Importance Performance Analysis to assess the discrepancy between the existing ecotourism facilities and tourists' perceptions of their importance before visiting the ecotourism sites and their satisfaction after visiting the sites. The tourists rated twenty-nine variables associated with facilities and services for importance and satisfaction. When plotted on an Importance-Performance Grid, seven variables were placed in Quadrant A, and there is a need to concentrate on these attributes to improve the performance. Whereas, in the modified Importance-Performance Grid, 27 of 29 variables fall in Quadrant A, indicating that significant improvements are required for these facilities. It can be concluded that a significant gap exists between the visitors' perceptions and experiences after partaking in ecotourism-related activities in Goa. To position Goa as a world-class tourist destination, there is a need to upgrade existing facilities. It is essential for destination planners to introduce sustainable ecotourism facilities in Goa and implement suitable corrective actions to meet international standards.

Keywords: Ecotourism, Importance performance analysis, Tourists Perception, Tourists Satisfaction, Sustainable Tourism Management, Goa, India

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1. Introduction

Over time, the tourism industry has experienced rapid growth. It has substantial growth potential for future expansion. Tourism is a significant promoter of economic development in the majority of earning countries. The Indian tourist sector contributes significantly to the country's economic growth by generating employment, bringing in foreign exchange, and other benefits (Kamat, 2013).

Despite its significant economic value, the rapid expansion of tourism has raised concerns about resource depletion, biodiversity loss, environmental degradation, and sociocultural impacts. Researchers and policymakers have placed greater emphasis on the need for tourism development models that balance social well-being, environmental preservation, and economic growth (Sharpley, 2020).

Ecotourism has emerged as one of the most popular forms of sustainable travel in this regard. Fennell (2020) defines ecotourism as responsible travel to natural areas that benefits local communities, conserves the environment, and promotes environmental interpretation and education. Weaver (2001) defines ecotourism as a type of nature-based travel that combines visitor education, community involvement, and environmental conservation. Empirical research indicates that environmentally conscious tourists place a high value on biodiversity conservation, environmental quality, cultural authenticity, and educational opportunities (Lee et al., 2018; Mehmetoglu & Normann, 2013). Ecotourism aims to mitigate the adverse ecological impacts of traditional tourism, while also offering host communities socio-economic benefits and conservation opportunities. As a result, ecotourism has become a central strategy for achieving sustainable tourism growth and enhancing destination competitiveness.

Despite its limited geographical area, the state of Goa exhibits high levels of biodiversity, with numerous animal and bird species. The Western Ghats, also called the Sahyadris, are a green cover for Goan ecosystems. Goa receives heavy rainfall, which contributes to the Western Ghats' extensive forest belt. Many visitors from North India travel to Goa during the monsoon season to enjoy the scenic beauty. There is plenty of greenery around, the beaches are empty, and the springs and waterfalls are at their peak. In addition, there are alluring off-season savings. For this very reason, Goa is seeing an increase in visitor numbers during the monsoons. Goa hosts a diverse array of trees and plants. The tropical climate is found along the coast. Goa's warm, humid climate is a result of its tropical position. Even in the coldest month, the average temperature is more than 20 degrees Celsius. During these muggy months, particularly from October to February, many foreign visitors come to Goa to take advantage of the humid weather and escape the bitterly cold weather back home. Foreign retirees spend more time in

Goa to take advantage of the humid climate. According to the Goa Tourism Department, the state hosts approximately 1,512 distinct plant species. The diversity is also showcased across numerous spice plantations where visitors may see how to cultivate cardamom, cloves, nutmeg, pepper, ginger, and cinnamon. Over 275 genera of birds, 48 genera of mammals, and 60 species of reptiles are known to exist. Goa, therefore, has great potential to grow as an ecotourism spot. Recognising these dynamics, the Goan government is trying to encourage entrepreneurship in the hinterland and ecotourism through a number of initiatives. Goa's tourism bureau is seeking to attract affluent travellers and provide them with a positive experience.

As tourism-related activities are a vital source of income for numerous countries worldwide, extensive research is conducted to identify the competitive advantages of particular destinations. Researchers have scrutinised how tourism affects society, culture, economy, and environment across various regions.

While the volume of research on tourism is rising, few recent studies have examined the significance of travellers' intentions to return (Oppermann, 1999); some have examined travellers' pleasure at various locations (Kozak, 2001). Understanding a destination's attractions or service components is essential, as they contribute significantly to visitor satisfaction and provide destination management with valuable information for destination development, especially in protected regions (Doucouliagos & Hall, 2010).

One of the main goals of any service provider is to ensure customer satisfaction. Strategic planning is indispensable for understanding visitor satisfaction and developing a competitive tourism destination. It is also important to understand how customers respond to different goods and services, how to attract new customers, and how to drive repeat business to identify areas for development. Understanding the expectations of tourists visiting a destination is vital for assessing its competitive edge. Although it can be challenging to quantify the tourism sector, satisfaction is a commonly used metric for gauging a destination's success. Customer loyalty and competitiveness are determined by satisfaction in the tourist business and other industries (D'Mello & Subhash, 2016).

Extant research on tourism in Goa has mainly examined visitor satisfaction, the impact of tourism, destination image, and tourism infrastructure. D'Mello and Subhash's (2016) research, one of the most relevant studies, employed a gap analysis approach to evaluate tourism infrastructure and discovered significant deficiencies in infrastructure provision. The study focused on generic tourism infrastructure rather than ecotourism-specific aspects such as environmental conservation, authenticity, community involvement, sustainability practices, and environmental interpretation.

Despite the extensive use of IPA in tourism research, there remains a paucity of empirical evidence on the evaluation of ecotourism facilities in Goa. Given the state's strategic policy focus on sustainable tourism development, a substantial research gap has emerged. This study represents a pioneering and forward-thinking effort in this regard. The current study is an original and fresh attempt in that direction.

IPA analysis requires tourists to evaluate the importance of various factors to their tourism experience and to rate the performance of these factors after participation (Deng, 2007; Oh, 2001). IPA is used to understand tourists' satisfaction. The research seeks to address this discrepancy by gauging tourists' perceptions of ecotourism and identifying aspects that need enhancement to improve overall quality. The research focuses on this small state to assess the importance placed on and tourists' satisfaction with the available ecotourism facilities, as thousands of national and international tourists visit the state. The findings suggest tactics to enhance these facilities and boost ecotourism. The research provides new evidence, vision, and opportunities that various tourism-related stakeholders can use to develop effective approaches to promoting ecotourism. It also attempts to assess the discrepancy between tourists' perceptions and their satisfaction with the ecotourism facilities available in Goa.

2. Literature Review

2.1. Ecotourism

Growing concerns about the impact of traditional tourism development on nature gave rise to the idea of ecotourism in the 1980s. While modern definitions include conservation, education, sustainability, and community involvement, earlier definitions focused on nature-based travel and environmental enjoyment (Stronza et al., 2019).

Fennell (2020) defines ecotourism as a specific type of sustainable tourism that involves ethical travel to natural regions, thereby preserving biodiversity and supporting local communities. Similarly, Weaver (2001) argues that ecotourism combines local involvement, visitor education, and environmental preservation within a unified tourism model.

Sustainable tourism refers to tourism growth that benefits current generations, along with future generations. A destination's competitiveness is increasingly being seen as dependent on sustainability. Research suggests that eco-friendly vacation locations are more likely to attract eco-aware tourists, enhance their reputation, and sustain viability in the long term (Dolnicar et al., 2008). Therefore, ecotourism is an essential strategy that tourist destinations are using to promote sustainability and attract tourists.

2.2. Tourist Satisfaction

Destination Satisfaction is a widely researched topic in tourism research (Ngọc, 2023). Customer satisfaction affects customers' revisit intention and their likelihood of recommending the travel destination to others. According to Oliver, in the Expectation-Disconfirmation theory proposed in 1980, satisfaction is determined by the association between expectations and actual experiences. When performance exceeds expectations, tourists are happy, indicating higher visitor satisfaction. On the contrary, customers are dissatisfied when expectations exceed performance (Yüksel & Yüksel, 2001). Visitors engaging in ecotourism have high expectations of the tourist destination; they expect high-quality, nature-driven experiences and to engage with the local community.

Since tourism plays a pivotal role in the broader service sector, research on customer satisfaction is concentrated in this area. This is because customer satisfaction affects expectations and intentions regarding future purchases, as well as location choice (Fuchs & Weiermair, 1993). The fundamental metric to evaluate the calibre of a tourist's experience is satisfaction. Once the tourist experience has been identified, destination managers and planners can provide infrastructure and services that match visitors' expectations and confirm whether they have had a positive experience (Hornback & Eagles, 1999). Reflecting this complexity, Tourist satisfaction has been studied from various perspectives and theoretical frameworks.

When a product or service performs better than expected, customers feel validated and may make additional purchases in the future. However, if performance fails to meet expectations, customers experience negative disconfirmation, meaning they won't be happy and will look for other options. According to this concept, customer satisfaction is determined by comparing the perception of the location prior to travel with the actual experience there (Chon, 1986). The foundation of an attitude-based strategy is the discrepancy between expectations and experiences. According to the expectation-disconfirmation paradigm, a visitor's satisfaction is determined by how well the facilities and services at their destination meet their pre-purchase expectations.

2.3. Importance-Performance Analysis (IPA)

IPA measures both the degree of customer satisfaction with the services provided and the relative valence that customers assign to different aspects. Methodologically, the IPA method determines whether a product is highly or poorly important to customers and if they have a positive or negative experience with it. This provides decision-makers with the subsequent advice on (Coghlan, 2012):

- i) Products or facilities that function well but need ongoing investment.
- ii) Products or facilities with poor performance that require increased investment.
- iii) Facilities or goods that, in the eyes of customers, are less vital and hence don't require a lot of funding.
- iv) Facilities or goods that customers find to be of very little value, despite the fact that this sector is receiving excessive investment.

IPA has been widely used across many types of studies and has also seen extensive application in the travel and tourism sector. IPA is a powerful instrument for organising marketing campaigns to promote a certain destination; tourist locations with limited experience in market research can utilise it (Hudson and Shephard, 1998). IPA, however, was mostly utilised to study specific tourism-related services or attractions in the business. For instance, Coghlan (2012) determined the elements of reef tourism that both pleased and displeased visitors. Ziegler et al. (2012) examined whether whale shark tourism successfully met consumer expectations by using IPA to measure visitors' satisfaction with whale shark tours.

Throughout this framework, numerous issues and causes of customer discontent with whale shark cruises were found. The customer experience on whale shark cruises can be enhanced by using this information. Using IPA, Sörensson & Friedrichs (2013) evaluated how well a particular vacation spot performed in terms of socio-environmental sustainability and if local and foreign travellers placed different values on sustainability considerations.

De Nisco et al. (2015) used IPA to study tourists' satisfaction at various tourism spots. He proposed that this technique could be used to highlight the pros and cons of a particular travel experience. Various researchers have used IPA to study sustainable tourism and religious tourism and identified gaps in the facilities available for tourism (Pillai et al., 2017; Kline et al., 2016).

Goan policymakers have been motivated to support other types of tourism apart from beach tourism due to growing concerns about overcrowding at destinations, environmental sustainability, and the concentration of tourism. The state boasts a variety of ecotourism attractions, including wildlife sanctuaries, forests, bird habitats, marshes, waterfalls, and spice plantations. Currently, there is a paucity of research on tourists' satisfaction with ecotourism amenities. D'Mello and Subhash's (2016) study identified deficiencies in the provision of tourism infrastructure, although it did not focus specifically on ecotourism facilities. Further research is required, focusing on studies that evaluate ecotourism from tourists' perspectives and identify areas for development.

The research seeks to equip designers with insights into enhancing ecotourism services to bolster the destination's competitiveness for future

growth, as no prior research in Goa has evaluated tourists' expectations regarding the state's ecotourism offerings through IP analysis. The aim is to assess tourists' satisfaction and perception towards the importance of ecotourism facilities in Goa. The goal of the research is to investigate expectations at different eco-destinations in Goa and assess satisfaction with the facilities offered. To identify key elements and regions in need of development to improve the standard of ecotourism. Based on the assessment of visitor expectations and satisfaction, conclusions can be drawn about these factors and the need for development to boost ecotourism in the state. Consequently, the present study will close this gap by offering fresh insights, viewpoints, and avenues for thought.

The literature assessment revealed substantial gaps, suggesting a scarcity of empirical studies on Goa's ecotourism infrastructure and the application of IPA in ecotourism within the Goan context. This study aims to test the hypothesis outlined below.

H₀: There is no significant difference between tourists' perceptions and satisfaction with the available ecotourism facilities.

3. Research Methodology

The goal of the study was to examine tourists' perceptions and evaluation of ecotourism infrastructure within the state of Goa. The investigation was conducted between January and May of 2023. Data were gathered from visitors to the state's ecotourism destinations, including spice farms and a bird-watching refuge, using a standardised questionnaire. Random sampling was applied. About 550 surveys were sent; 447 were returned by visitors, some incomplete. As a result, only 400 complete surveys were included in the analysis. The questionnaire consisted of two segments. The initial part evaluated the demographic data. The resources the state offers for ecotourism are covered in the second section.

The purpose of the 29 statements was to gauge visitors' feelings about the state's ecotourism offerings and their satisfaction with them. The data were analysed using a range of statistical techniques, depending on the models that were employed in other investigations. IPA was conducted to answer the Research Question (**RQ**): What was the tourists' perception of the ecotourism facilities in Goa, and what did they experience while engaging in ecotourism activities concerning the various facilities offered? The analysis aimed to assess tourists' satisfaction with ecotourism amenities in Goa.

Based on the importance assigned and performance resulting from using the various facilities offered for ecotourism in Goa, the original importance performance analysis (IPA), developed by Martilla & James

(1977), suggests that customer satisfaction can be measured by the difference between a consumer's expectation of a product or service and his/her actual experience after service delivery. After that, the outcome is displayed as a two-dimensional grid with four quadrants. (Joppe et al., 2001, Kozak & Nield, 1998; Pizam & Ellis, 1999; Ryan, 1995). The analysis reveals the results displayed in four quadrants labelled A, B, C, and D.

Quadrant A: Concentrate here, where the aspect is rated highly in relation to importance, and the performance is appraised poorly. Consequently, efforts are needed to increase satisfaction.

Quadrant B: Keep up the good work; the variables in this section are highly evaluated in terms of performance and importance. As a result, efforts must be made to preserve quality and resources must be continued.

Quadrant C: Low Priority, elements are ranked low in terms of performance and importance. Until respondents start to perceive this area as more essential, usually nothing is done about it, and no changes in resources are needed.

Quadrant D - Potential overkill; in this case, the performance is rated highly, but the importance is rated poorly. Typically, there is no need for more resource investment or action in these areas. The results will highlight the infrastructure features that tourists find satisfactory, as well as those that need immediate development or enhancement.

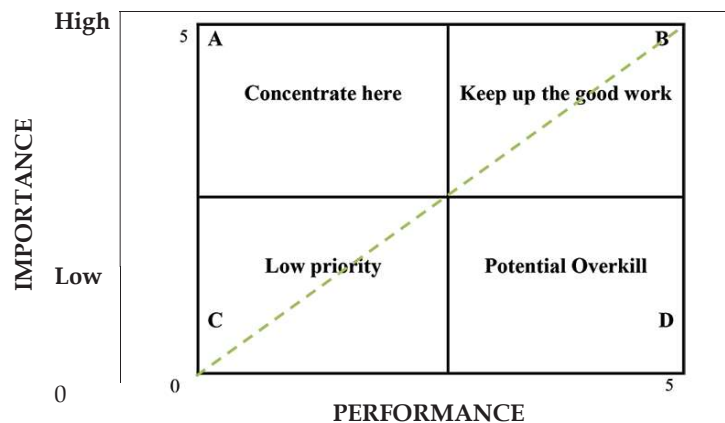


Figure 1: Importance- Performance Matrix
Source: Importance-Performance Matrix (Chen, 2014)

The modified IP Analysis (Abalo *et al.*, 2007; Deng, 2007; Azzopardi & Nash, 2013; Chen, 2014) diagonally divides the elements used in the study into two, those elements above the diagonal line come under *Category A* where more concentration is required and those below the diagonal come

under *Category B* which is 'low priority or keep up the good work or potential overkill' (Figure 1).

Statistical Package for the Social Sciences (SPSS) was used. Mean analysis, IP analysis (Importance-Satisfaction for ecotourism facilities before and after the visit), and a paired t-test were employed. Mean analysis reflects tourists' perceptions of the importance of and satisfaction with the ecotourism facilities, derived from responses on a 5-point Likert scale, where 1 denotes less important, and 5 denotes very important/very satisfactory. A mean score ranging from 3 to 5 indicates that respondents consider the infrastructure important and satisfactory; a value between 1 and 2 indicates it is unimportant and unsatisfactory. Gap analysis shows the difference between the Satisfaction Mean (perceived mean after the trip) and the Importance Mean (expected mean before the trip) (Tonge & Moore, 2007; Hanim & Redzuan, 2010). A discrepancy of zero or greater suggests that tourists' actual experience with the ecotourism facilities meets or exceeds their expectations, indicating satisfaction; a negative value indicates that expectations exceeded the experience, indicating dissatisfaction.

Paired t-test assessed the gap's statistical significance. The test evaluated the following null hypothesis:

H₀: There is no significant difference between tourists' perception and satisfaction regarding the available tourism facilities.

4. Data Analysis

Table 1: Demographic Profile of tourists

Demographic Profile (n=400)	Number	%	Demographic Profile	Number	%
Gender			Marital Status		
Male	190	47.5	Married	205	51.2
Female	210	52.5	Unmarried	180	45.0
Age			Separated	15	3.8
18-29	97	24.3	Education		
30-39	172	43.0	Secondary School	109	27.2
40-49	67	16.7	Higher Secondary School	68	17.0
50-59	29	7.2	Graduation	195	48.8
Above 60	35	8.8	Post Graduation	28	7.0
Monthly Income			Social class		
Less than 25,000	65	16.3	Individual	165	41.3
25,001-50,000	134	33.5	Couple with no kids	110	27.5
50,001-75,000	116	29.0	Family with children	125	31.2
Above 75,000	85	21.2			

Table 2: Importance-Performance Analysis (IPA)

Variables	Importance	Performance	Gap (P)-(I)	t	p	Original	Diagonal
1. Hygiene	4.7	3.82	-0.88	17.518	0.00	B	B
2. Security	4.56	2.92	-1.64	27.363	0.00	C	A
3. Access for disabled	4.44	2.73	-1.71	29.364	0.00	C	A
4. Health care services	4.46	2.73	-1.73	29.4	0.00	C	A
5. Calm environment	4.71	3.2	-1.51	30.653	0.00	A	A
6. Accessibility	4.76	3.44	-1.32	30.377	0.00	B	A
7. Use of containers made of natural materials (wood, recycled paper)	4.76	3.56	-1.2	29.736	0.00	B	A
8. Flexibility	4.29	2.9	-1.39	25.518	0.00	C	B
9. Recycling of waste	4.54	3.21	-1.33	25.105	0.00	C	A
10. Energy saving measures	4.58	3.29	-1.29	25.182	0.00	D	A
11. Water saving initiatives	4.61	3.32	-1.29	25.374	0.00	D	A
12. Greenery	4.75	3.59	-1.16	26.218	0.00	B	A
13. Entertainment	4.78	3.56	-1.22	27.19	0.00	B	A
14. Food	4.77	3.55	-1.22	26.637	0.00	B	A
15. Accommodation	4.73	3.42	-1.31	25.939	0.00	B	A
16. Comfort	4.73	3.41	-1.32	27.155	0.00	B	A
17. Guides with great knowledge	4.7	3.49	-1.21	25.216	0.00	B	A
18. Excellent communication skills of guides	4.65	3.49	-1.16	23.694	0.00	D	A
19. Environmental commitment of staff	4.64	3.46	-1.18	23.579	0.00	D	A
20. Contribute to local tourism businesses	4.62	3.21	-1.41	28.483	0.00	C	A
21. Increase of tourism related employment	4.65	3.17	-1.48	28.245	0.00	C	A
22. Better living conditions for the locals	4.66	3.2	-1.46	28.704	0.00	A	A
23. Preservation of water quality	4.66	3.09	-1.57	30.967	0.00	A	A
24. Protection of the natural environment	4.72	3.17	-1.55	31.101	0.00	A	A
25. Preservation of air quality	4.68	3.39	-1.29	27.321	0.00	B	A
26. Availability of local goods	4.64	3.39	-1.25	24.015	0.00	D	A
27. Chance to interact with local people	4.68	3.21	-1.47	28.245	0.00	A	A
28. Opportunity to view life of locals	4.72	3.18	-1.54	29.681	0.00	A	A
29. Hospitality of residents	4.69	3.21	-1.48	28.221	0.00	A	A

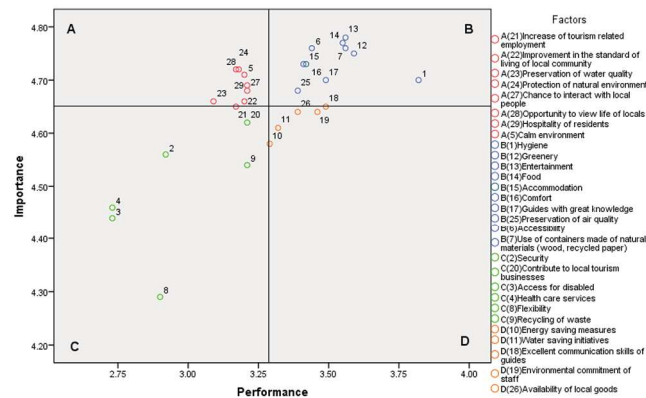


Figure 2: Importance-Performance Matrix (Original Grid Analysis)

A statistical difference was identified using a paired *t*-test in tourists' perceptions of the importance of ecotourism facilities and their satisfaction, leading to rejection of the null hypothesis and acceptance of the alternative hypothesis.

Grid analysis (Table 3, original column, and Figure 2) identifies seven variables in **Quadrant A** (Concentrate Here): calm environment, improvement in local community living standards, water quality preservation, natural environment protection, opportunities to interact with locals, observation of local life, and resident hospitality. These findings suggest that priority resources should be allocated to these variables to enhance tourist satisfaction.

The ten attributes in **Quadrant B** are hygiene, accessibility, use of natural-material containers (wood, recycled paper), greenery, entertainment, food, accommodation, comfort, knowledgeable guides, and air-quality preservation. These variables require minimal additional effort to maintain tourist satisfaction, but resources should continue to support them to preserve quality.

The 7 variables in **Quadrant C** (Low Priority) comprise security, access for the disabled, health care services, flexibility, recycling of waste, contributing to local tourism businesses, and increase of tourism-related employment. Consequently, minimal or no effort and resources should be directed toward them, as tourists regard them as low priority in the long term and in practice, and their satisfaction, in terms of being low, is likewise insignificant.

The 5 variables in **Quadrant D** (Possible Overkill) comprise energy-saving measures, water-saving initiatives, excellent communication skills among guides, environmental commitment among staff, and availability of local goods. Thus, they should remain at this level, and no resources should be allocated given their limited importance in the foreseeable future.

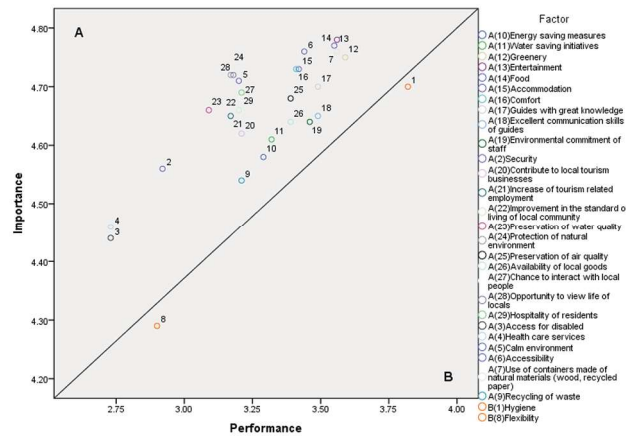


Figure 3: Importance-Performance Matrix (Modified Grid Analysis)

Since the Modified IP graph presented in the study, based on the diagonal drawn starting at the scale's origin, with the exception of the two variables hygiene and flexibility (which fall in **Quadrant B**), all remaining 27 variables lie in the top right quadrant (above the diagonal), i.e., **Quadrant A**. This indicates that significant resource-management efforts are required to sustain the destination's attractiveness in the coming years. The two variables in **Quadrant B** also require efficient resource management to maintain their performance. While the original IPA placed only seven of the 29 variables in **Quadrant A**, the revised IPA places nearly 27 of the 29 variables in **Quadrant A**. This stark contrast clearly demonstrates that ecotourism facilities in Goa are either largely absent, poorly managed, or severely mismanaged. This constitutes a serious issue that must be addressed by the relevant authorities as a priority; otherwise, the negative will outweigh the positive.

Conventional IPA evaluates characteristics in relation to the overall sample means. Even if performance does not meet visitor expectations, an attribute may appear good simply because it surpasses other attributes. In contrast, the diagonal line where importance equals performance represents an ideal state that the modified IPA uses as a basis for comparison. Any attribute above the diagonal must be improved, as its importance exceeds its performance.

The updated IPA consequently imposes a more rigorous assessment of destination performance and highlights the extent to which tourist expectations remain unmet. Performance shortcomings are not isolated but pervasive, with 27 qualities found to be below the diagonal. The results are in line with Deng (2007) and Azzopardi and Nash (2013), which indicate that standard IPA may hide service-related issues and give managers of the tourist destination a positive image.

Therefore, the hypothesis is not accepted, as tourists visiting the ecotourism site in Goa are dissatisfied with the available facilities. **H₀:** There is no significant difference between tourists' perception and satisfaction regarding the available tourism facilities.

5. Discussion

The results are in line with earlier studies done using the IPA technique in nature-based tourism contexts. Tonge and Moore (2007) found that managing environmental sustainability was an essential driver for tourists visiting the marine parks. Sörensson and von Friedrichs (2013) pointed out that eco-friendly characteristics at tourist spots can sometimes not be up to the mark, even though they are essential. Ziegler et al. (2012) found significant gaps between visitors' expectations and what they actually experienced during their shark-whale tours. This research expands the existing literature by incorporating data from Goa to demonstrate that protecting the environment and engaging the local community are important factors in ecotourism satisfaction across destinations.

Importance Performance Analysis revealed that the seven variables located in Quadrant A (Concentrate Here) comprise a calm environment, better living conditions for the locals, preserving the quality of water, protecting nature, providing opportunities to interact with local people, and allowing visitors to observe local life and experience residents' hospitality. Their condition indicates that resources must be focused on these attributes urgently to enhance the tourist experience. The ten attributes in Quadrant B are hygiene, accessibility, use of containers made of natural materials (wood, recycled paper), greenery, entertainment, food, accommodation, comfort, and guides with extensive knowledge and preservation of air quality, indicating that only a small amount of effort is required to enhance tourist satisfaction, yet they should keep receiving resources to preserve quality. The seven variables classified in Quadrant C (Low Priority) are security, access for the disabled, health care services, flexibility, recycling of waste, contributing to local tourism businesses, and increase of tourism-related employment. Therefore, minimal or no effort and resources are allocated to them, because tourists view them as unimportant. Consequently, their low satisfaction is also considered relatively insignificant. The five variables that fall into Quadrant D (Possible Overkill) are energy-saving measures, water-saving initiatives, excellent communication skills of guides, environmental commitment of staff, and availability of local goods. Thus, no further efforts must be devoted because of its low importance.

In aggregate, the facilities given can be improved. In the Modified IPA, almost twenty-seven of the twenty-nine variables fall within Upper Segment A, resulting in only two items remaining outside. Consequently, there is a

substantial discrepancy between visitors' perceptions and their subsequent experiences after participating in eco-friendly tourism activities in the state. Hence, the hypothesis is rejected, and this leads to the conclusion that most visitors believe the ecotourism facilities in Goa are largely insufficient, poorly maintained, and fall short of their expectations.

Finally, the ecotourism facilities in Goa require focused attention; otherwise, the region's appeal as a tourist destination could deteriorate in the coming years, and its economic benefits and the local community could suffer in a sustainable manner. Enhancing these facilities is essential to maintain Goa's overall competitiveness.

6. Theoretical Contributions

This study expands the use of IPA in ecotourism in a developing destination, thereby contributing to the existing literature on tourism and ecotourism. Research on Goa's tourism infrastructure and visitor satisfaction has been conducted previously, but little attention has been given to ecotourism amenities and services specifically. The analysis also examines the gap between satisfaction levels and perceived importance. Visitor satisfaction in ecotourism settings is significantly influenced by the extent to which environmental and community-related expectations are met.

This study provides insights into the use of IPA as a research tool. It shows a large gap between the results of traditional and modified IPA. The findings confirm that modified IPA provides a more precise evaluation than conventional IPA.

This paper presents empirical data from the state of Goa, where ecotourism research is scarce despite numerous Government initiatives to promote ecotourism.

7. Managerial and Policy Implications

The research findings provide essential information to local communities, destination legislators and planners, and ecotourism operators engaged in Goa's ecotourism development. Tourists value attributes such as community participation, environmental preservation, and authenticity. However, many of these attributes do not meet visitors' expectations and therefore require intervention.

Environmental preservation emerged as an important factor in satisfying visitors. The critical area in need of improvement is the maintenance of a calm environment and the protection of natural surroundings. Tourism managers should intensify measures to protect biodiversity at various ecotourism sites, implement effective recycling and waste management programs, and

adopt eco-friendly materials and practices. These measures will enhance the sustainable use of ecotourism resources and lead to visitors' satisfaction.

Tourists are enthusiastic about an opportunity to engage with the locals. The study demonstrated that engaging with locals is an important aspect of ecotourism and that there is an urgent need to better understand this interaction. Policy managers should provide training and financial support to local entrepreneurs and promote community-based tourism enterprises. Locals must be included in the tourism development decisions. Mechanisms that ensure tourism benefits to locals should be undertaken. Tourists should have the opportunity to experience local culture, which will enhance their experience and make it more authentic.

Ecotourism primarily aims to educate tourists and foster environmental awareness. Destination managers should create multilingual educational materials, train the tourist guides and foster tourist awareness initiatives. This could improve tourist satisfaction and help conserve the environment. Destination managers should conduct regular tourist satisfaction surveys and incorporate tourists' suggestions to enhance their ecotourism experience. There is a necessity to promote collaboration among the government, tourism planners and operators and the local community.

8. Conclusion

Programs such as these would assist Goa's ecotourism industry in maintaining long-term competitiveness and enabling adaptive management. The current study assessed visitors' perceptions of ecotourism facilities in Goa using IPA, gap analysis, and paired sample t-tests to gauge the significance of these facilities.

The results showed that visitors' expectations were generally higher than their actual experiences, with significant differences between their ratings of importance and satisfaction across all 29 criteria. The null hypothesis, which stated that no discernible difference exists between satisfaction levels with ecotourism amenities and judgements of importance, was found to be incorrect.

The traditional IPA identified seven key attributes that require immediate attention from managers, including a calm environment, improved living standards for local communities, preserved water quality, protection of the natural environment, opportunities to interact with locals, the chance to observe local lifestyles, and residents' hospitality.

An important distinction emerges between the modified IPA and the regular IPA results. The modified IPA indicated that 27 of 29 variables needed improvement, whereas the standard IPA identified only 7 priority

variables. Therefore, it can be seen that up-to-date analytical techniques should be used as conventional methods might have certain shortcomings. The findings show that, although the state of Goa has significant potential for ecotourism, modern tourists are well-informed and environmentally conscious, making it challenging to satisfy them. To realise Goa's potential in ecotourism development, there is a need to improve environmental management strategies and engage with the local community.

The research revealed that enhancing the quality of ecotourism facilities can raise tourists' satisfaction and strengthen destination competitiveness. It will also support biodiversity conservation and foster sustainable tourism in Goa.

9. Limitations and Future Research

Research on self-reported responses of tourists, which may be based on individual expectations and prior experiences, can be highly influenced by socio-demographic factors. Future research could use a mixed-methods approach, combining qualitative and quantitative methods.

Tourists' opinions were collected at a single point in time; a longitudinal approach could reveal how tourists' expectations and satisfaction change over time. In the current study, only tourists' opinions were taken. Future studies could consider the views of local communities, tourism operators, government bodies, and other stakeholders to provide comprehensive insight into ecotourism development.

Future research could compare international and domestic visitors, analyse how satisfaction relates to revisit behaviour, and assess locals' views on ecotourism development. The Structural Equation Modelling technique could be employed to analyse the data. The influence of sustainability certification on visitors' satisfaction warrants consideration. This study can be replicated in other contexts. Travellers could be categorised based on their country of origin. A similar strategy can be tested in future studies for other delicate habitats, such as coastal regions. To assess tourists' perceptions and satisfaction, other methodologies might be employed.

These approaches would assist with evidence based tourism planning in Goa and other developing ecotourism destinations and advance a more thorough understanding of ecotourism development.

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