



Passenger satisfaction towards water transportation in Kerala with special focuses on the Alappuzha district.

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Abstract

Water transportation is defined as the movement of people and goods by boat, ship, or sailboat across the ocean, sea, lake, canal, or river, or via other types of water transportation. Water transportation is the most cost-effective and historically significant kind of transportation, and it has played an important role in Kerala, providing an affordable means of transporting passengers and products over the years. The State Water Transport body, a vital government body, handles the transportation needs of residents in waterlogged districts like as Alappuzha, Kottayam, Kollam, Ernakulam, Kannur, and Kasargod. Despite its commercial orientation, the department takes a service-oriented attitude, having evolved into an Essential Service Department after being classified as "Essential Service" during the era of transportation. Despite the department's critical function, there has been little research looking at the elements that influence passenger satisfaction in water transportation in Kerala. This study tries to close this gap by examining the elements that influence "Passenger Satisfaction with Water Transportation in Kerala," with a particular emphasis on the Alappuzha district. We hope that this research will help us better understand the factors that influence passenger satisfaction in the context of Kerala's water transportation system.

Key Words: Water Transportation, Passenger Satisfaction, Service Quality, Water Transport Department,

Introduction

Water transportation is essential for linking communities, particularly in water-rich areas such as Alappuzha, Kerala. Kerala's inland navigation system includes 41 west-flowing rivers and backwaters. In Kerala, water transport using these channels is primarily for short-distance passenger services. Informal country boats bring goods to public sector enterprises such as fertilizer and chemical plants in Travancore and Kochi, among other places. Understanding passenger satisfaction is critical for enhancing service quality and ensuring the viability of water transportation systems. This theoretical analysis seeks to provide a

comprehensive knowledge of the aspects that influence passenger satisfaction with water transportation in Alappuzha waterways.

The Kerala State Water Transport organisation (SWTD) is a government organisation that oversees the inland navigation system in the Indian state of Kerala and provides inland water transportation services. The SWTD is one of several government departments in the state. It stands for responding to the traffic demands of the residents of the flooded parts of the District of Alappuzha, Kottayam, Kollam, Ernakulam, Kannur, and Kasaragod. The department is led by the State Minister in charge of Transportation.

Despite the fact that the Department is commercial, it functions similarly to a service Department. Since 'Transportation' was added to the 'Essential Service' category, this Department has evolved into an Essential Service Department. The Department carries around 150 lakh passengers per year on wooden/steel and fiber glass passenger boats. The Department previously used solely conventional wooden passenger boats to transport passengers, but in keeping with technological advancements, the Department has moved to modern steel passenger boats.

With reference to the review of latest studies and statistics. Water transport is important for passenger travel in Kerala, particularly in locations with a lot of water bodies, such as the backwaters and coastal districts. Kerala's large network of backwaters and rivers facilitates passenger mobility connecting numerous cities and villages; also, the state government conducts public ferry services to provide economical and convenient transportation options for citizens.

Service Quality Theory

Service quality is a key factor in passenger happiness. It includes elements such as dependability, responsiveness, certainty, empathy, and tangibles that contribute to perceived service quality. When applying this idea to water transportation, factors such as punctuality, cleanliness, safety precautions, and personnel behaviour have a substantial impact on passenger pleasure.

Expectancy-Disconfirmation Theory

According to this approach, contentment is determined by comparing expectations to actual experiences. Passengers' expectations for water transportation in Alappuzha include trip time, comfort, price, and amenities. Their satisfaction is determined by whether their expectations are met, exceeded, or fall short.

Transportation Accessibility Theory

Accessibility theory emphasises the necessity of having easy access to transportation modes and facilities. In Alappuzha, variables such as terminal availability, service frequency, ticketing simplicity, and integration with other forms of transportation all have an impact on passenger satisfaction.

Statement of the problem

Kerala's transport infrastructure is mainly reliant on its intricate network of 41 westward-flowing rivers and wide backwaters, which stretch 1895 kilometers. While these waterways serve an important role in connecting outlying islands and villages to the mainland, there are constraints that prevent their full utilisation. Despite its promise, challenges such as inefficient operations, poor infrastructure, and environmental concerns make it difficult to fully realise the benefits of inland water transport in Kerala. This study examines the characteristics that contribute to consumer satisfaction with water and service quality, as well as the service offered by water transport in Kerala. As a result, the study seeks to analyse these aspects and provide solutions to improve the efficiency, sustainability, and overall efficacy of water transportation in the region.

Objectives of the study

To identify the factors influencing passenger satisfaction towards water transportation.

Hypotheses of the study

There is no significant difference in the variance of factors influencing passenger satisfaction towards water transportation.

Review of Related Literature

In her 1980 research work "Tourist Behaviour, Economy and Area Development Plan - Selected Tourist Centers of Tamil Nadu," Thankamani, K examined the behavioural aspects of tourists and assesses the tourism resources and impact of tourism on the local economy and employment structure, setting a foundational understanding of tourism dynamics which often rely on effective water transport systems. Hilary Metcalf (1987) analyzed the employment generation in the water transport industry, identifying various categories of employment and work responsibilities within the broader tourism sector, highlighting the necessity and importance of human resource development specifically tailored to water transport. Morrison (1989), in his book "Hospitality and Travel Marketing," views tourism as a people-industry, emphasizing that the quality of hospitality in sectors such as hotels, restaurants, and gift shops, often interconnected by water transport, is crucial for the industry's success. Sudheer, S.V. (1991) conducted a detailed investigation into the availability of natural resources, the functioning of government machinery, and the economic contributions of tourism in Kerala, underlining the role of water transport in enhancing these contributions. Vijayakumar, B (1995) highlighted the importance of native water transport, assessing its demand in a tropical region like Kerala. His study, though confined to foreign tourists, empirically establishes that the natural beauty of Kerala, accessible through water transport, attracts foreign tourists to 'God's Own Country.' Narayana, S.V, and Sivaramakrishnan, R (1996) analyzed the views of water transport respondents in Pondicherry, examining their awareness of environmental variables and their relationship with water transport and tourism. Joseph Antony (1997) explored the role of the Kerala Tourism Development Corporation (KTDC) in promoting water transport in Kerala. He observes that KTDC plays a

significant role in the development of the water transport industry, promoting tourism as an industry. Joseph S. Chen (2001) attempted to help scholars and practitioners visualize the consequences of water transport development and urban residents' support for future tourism expansion, clearly portraying residents' concerns about water transport's economic, social, cultural, and environmental impacts. Thami P. Santhosh (2002) studied the contributions of water transport, deeply analyzing the eco-tourism product potential, market potential, and the need for the development of eco-tourism facilities. He concludes that the eco-tourism market potential is very high and that it can be marketed widely as an important tourism product in Kerala. Johny, C.D (2002), in his Ph.D. research work "Economics of water transport in Kerala: A Study of Selected Tourism Spots," analyzed inter-spot variations in the trend of demand and supply of water transport activity. Anil Kumar, T.R (2003) has analyzed the seasonality of water transport in Kerala, concluding that November to May is the peak time for water transport. He has also conducted an in-depth study on the employment opportunities provided by the water transport industry. Sarngadharan, M, and Retnakumari (2005) revealed that Kerala has far exceeded international tourists' expectations in terms of water transport attractions. Silpa and Rajithakumar (2005) remarked that human resources associated with the water transport industry should be well-versed with existing government rules, laws, and regulations on water transport. Vijayan, R (2007), in his research work "Tourism development and involvement of local people at destination," studied the attitude of local people in water transport towards tourism development. He also examines the impact of tourism on the economic and social life of destination residents and the role of officials in bringing awareness among local people regarding the benefits of tourism. The review reveals that the water transport industry plays a significant role in transforming the economy through the eradication of poverty, generation of employment, and contribution to the exchequer in the form of FEE. This socio-cultural and economic benefit necessitates the promotion of this highly promising industry. Various agencies operate at global, national, and regional levels in both government and private sectors for its promotion and development. While many studies on water transport and tourism have been conducted, focusing on impacts, contributions, marketing, employees' loyalty, career opportunities, and challenges, exhaustive studies on water transport promotion and the role played by agencies in its promotion remain limited.

Need and significance of the study

Water transportation is an important means of transportation in Kerala, particularly in the Alappuzha district, sometimes known as the "Venice of the East" due to its enormous network of inland waterways. Despite its importance, passenger satisfaction in this industry has not been fully researched. Understanding passenger happiness is critical since it has a direct impact on the utilisation rates and overall effectiveness of water transportation services. This study meets a significant need by identifying and analysing the numerous elements that influence passenger pleasure. The study focuses on Alappuzha, where water transport plays an important role in everyday commuting, tourism, and local trade, and gives specific insights that can assist improve service quality and operational efficiency.

This study is significant not only for enhancing passenger experiences, but also for sustainable transport and regional development. Improved satisfaction with water transport can lead to higher ridership, reducing dependency on roads, which can help to alleviate traffic congestion and pollution. Furthermore, pleasant passenger experiences might benefit tourism, which is a major economic driver in Alappuzha. This study helps policymakers and transport authorities make educated decisions about developing and promoting efficient, safe, and user-friendly water transportation systems by identifying critical areas for improvement. Finally, our research adds to the region's sustainable development goals by fostering a more connected, robust, and environmentally friendly transportation system.

This study critically examines passenger satisfaction with water transportation in Kerala, with a particular focus on the Alappuzha district. By delving into this subject, the research seeks to uncover key factors that influence satisfaction levels, providing insights that can inform improvements in service quality. This, in turn, could lead to increased job creation, a boost in tourism, and enhanced overall development in the state. Understanding passenger satisfaction is crucial for stakeholders to make informed decisions that maximize the socio-economic benefits of water transportation, thereby contributing to Kerala's sustainable growth and development.

Scope of the study

The study is centered on evaluating passenger satisfaction with the State Water Transport system, delving into multiple facets of water transportation services such as travel quality, staff behavior, safety measures, and punctuality. The sample population comprises passengers utilizing the Alappuzha water transport services. Through this research, the goal is to analyze and assess the overall quality of water transportation services provided, drawing conclusions and insights based on the experiences and feedback gathered from this specific population.

Research Methodology

The study is descriptive and analytical in nature and is based on primary data pertaining to passengers of Water Transport at Alappuzha district of Kerala for the period ranging from two weeks from 14-04-2024. Factor analysis is the statistical test applied and the sample size was 132 respondents, who were collected under Convenient Sampling Method.

Analysis and Interpretations

Table 1.1 KMO and Bartlett's Test-Passenger satisfaction towards water transportation in Kerala

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.			.784
Bartlett's Test of Sphericity	Test of	Approx. Chi-Square	4479.832
		df	105
		Sig.	.000

Source: Primary data

The KMO value is 0.784, which falls within the range of 0.7 to 0.8. This indicates that the sample size is adequate for factor analysis and it indicating that the data to examine the passenger satisfaction towards water transportation in Kerala are likely to yield reliable factors. Bartlett's Test of Sphericity assesses whether the correlation matrix is significantly different from an identity matrix and the approximate Chi-Square value is 4479.832 with 105 degrees of freedom, and the associated p-value (Sig.) is 0.000. This p-value is well below the threshold of 0.05, indicating that the correlations between variables are significantly different from zero.

Table 1.2 Communalities -Passenger satisfaction towards water transportation in Kerala

	Initial	Extraction
Local Connectivity	1.000	.870
Weather Protection	1.000	.708
Comfortable Seating arrangements	1.000	.708
Onboard Facilities	1.000	.957
Timely Information	1.000	.934
TravelTime	1.000	.856
Trust	1.000	.900
Staffs behavior	1.000	.845
Fare charges	1.000	.872
Route Coverage	1.000	.924
Service Frequency	1.000	.694
Safety Measures	1.000	.949
Cleanliness	1.000	.935
Comfort	1.000	.885
Accessibility	1.000	.781

Source: Primary data

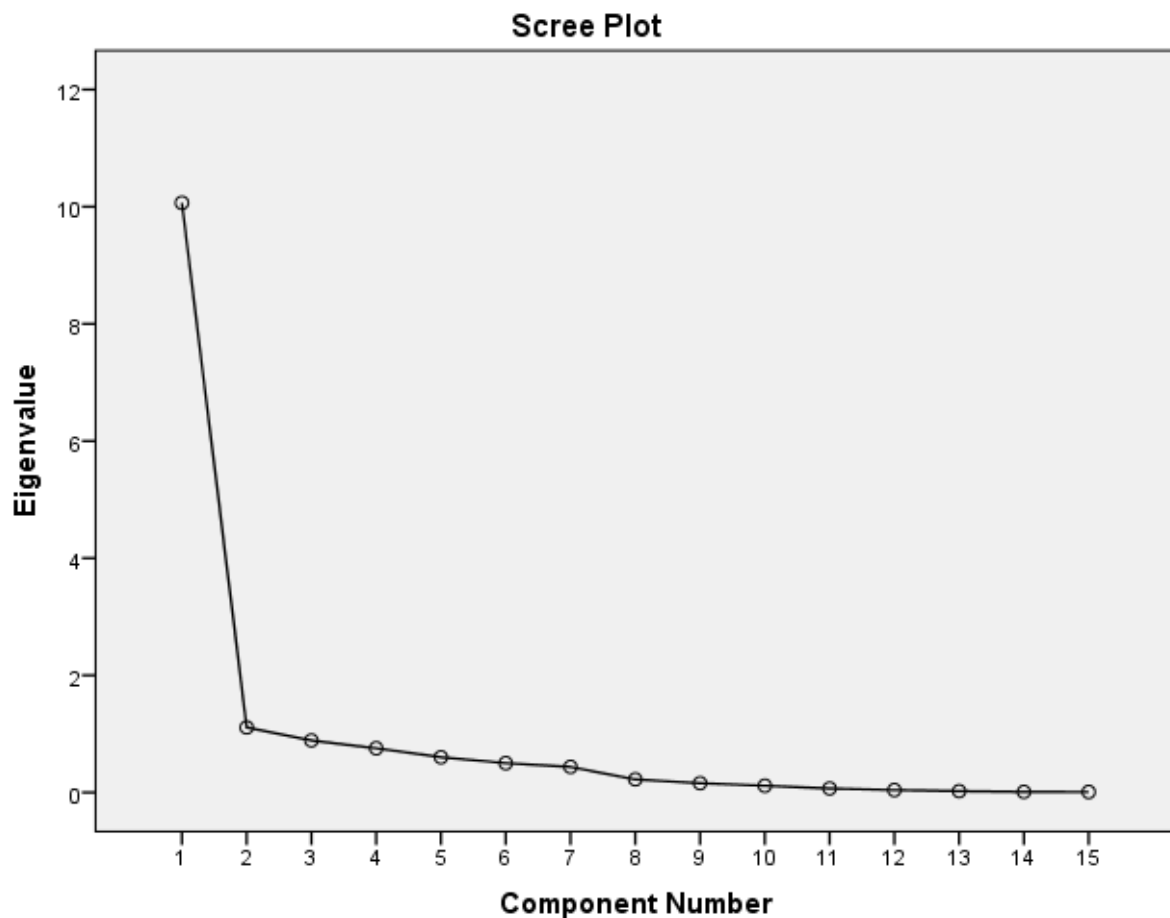
Variables such as Onboard Facilities (0.957), Timely Information (0.934), Safety Measures (0.949), and Cleanliness (0.935) have high communalities, indicating that a large portion of their variance is captured by the extracted factors to examine the passenger satisfaction towards water transportation in Kerala. At the same time, variables like Service Frequency (0.694) and Weather Protection (0.708) have moderate communalities to examine the passenger satisfaction towards water transportation in Kerala.

Table 1.3 Total Variance Explained -Passenger satisfaction towards water transportation in Kerala

Component	Initial Eigenvalues			Extraction Sums of Squared			Rotation Sums of Squared		
				Loadings			Loadings		
	Total	%	of Cumulative	Total	%	of Cumulative	Total	%	of Cumulative
		Variance	%						
1	10.066	67.109	67.109	10.066	67.109	67.109	5.750	38.331	38.331
2	1.109	7.392	74.502	1.109	7.392	74.502	3.023	20.151	58.483
3	.887	5.914	80.416	.887	5.914	80.416	2.066	13.772	72.255
4	.754	5.028	85.444	.754	5.028	85.444	1.978	13.189	85.444
5	.602	4.012	89.457						
6	.501	3.340	92.796						
7	.436	2.904	95.701						
8	.223	1.483	97.184						
9	.158	1.053	98.237						
10	.115	.769	99.006						
11	.069	.457	99.463						
12	.041	.275	99.739						
13	.022	.146	99.884						
14	.010	.065	99.950						
15	.008	.050	100.000						
Extraction Method: Principal Component Analysis.									

Source: Primary data

The initial eigenvalues indicate to explain the passenger satisfaction towards water transportation in Kerala show the first principal component explains 67.109% of the variance, while the second component explains an additional 7.392%, making a cumulative total of 74.502%. Together with the third and fourth components, which explain 5.914% and 5.028% respectively, these four components account for a cumulative 85.444% of the variance. This high cumulative percentage suggests that a significant portion of the variability in passenger satisfaction towards water transportation in Kerala can be captured with just a few components. After rotation, which helps in achieving a more interpretable structure, the first component's variance explanation decreases to 38.331%, but the second, third, and fourth components explain 20.151%, 13.772%, and 13.189% of the variance respectively.

Figure 1.1 Scree Plot -Passenger satisfaction towards water transportation in Kerala**Table 1.4 Rotated Component Matrix -Passenger satisfaction towards water transportation in Kerala**

	Component			
	1	2	3	4
Cleanliness	.892	-.006	.238	.286
Safety Measures	.863	.177	.285	.305
Trust	.843	.337	.275	.010
Comfort	.767	.322	-.014	.440
Fare charges	.727	.474	.160	.305
Travel Time	.716	.466	.329	.136
Route Coverage	.679	.531	.201	.375
Staffs Behavior	.653	.413	.494	.062
Service Frequency	.608	.451	.271	.217
Service Quality and Reliability				
Timely Information	.143	.834	.368	.286
Onboard Facilities	.466	.810	.154	.247
Informational and Infrastructural Support				
Local Connectivity	.219	.115	.762	.477

Weather Protection	.268	.305	.737	-.020
Environmental and Connectivity Aspects				
Accessibility	.231	.238	.110	.812
Comfortable Seating Arrangements	.451	.403	.254	.527
Physical Accessibility and Comfort				
Extraction Method: Principal Component Analysis.				
Rotation Method: Varimax with Kaiser Normalization.				
a. Rotation converged in 7 iterations.				

Source: Primary data

Variables such as Cleanliness (.892), Safety Measures (.863), Trust (.843), Comfort (.767), Fare Charges (.727), and Travel Time (.716) load highly on the first component to explain the passenger satisfaction towards water transportation in Kerala. This suggests that Component 1 captures a dimension related to the overall quality and reliability of the service, encompassing cleanliness, safety, trust, comfort, affordability, and efficiency and it is related with **‘Service Quality and Reliability’**.

Timely Information (.834) and Onboard Facilities (.810) have high loadings on the second component to explain the passenger satisfaction towards water transportation in Kerala. This indicates that Component 2 likely represents the informational and infrastructural aspects of the service, highlighting the importance of timely and accurate information along with the availability and quality of facilities on board and it is related with **‘Informational and Infrastructural Support’**.

Local Connectivity (.762) and Weather Protection (.737) are the prominent variables in Component 3 to explain the passenger satisfaction towards water transportation in Kerala. This component appears to be related to external factors affecting the convenience and protection offered by the service, emphasizing the connectivity to local destinations and the adequacy of weather protection measures and it is related with **‘Environmental and Connectivity Aspects’**.

Accessibility (.812) and Comfortable Seating Arrangements (.527) load highly on the fourth component. This component focuses on the physical accessibility and comfort of the service, which includes the ease of access to the service and the comfort of seating arrangements provided and it is related with **‘Physical Accessibility and Comfort’**.

Conclusion

In conclusion, the study of passenger satisfaction with water transport in Kerala, with a special focus on the Alappuzha area, demonstrates that numerous crucial criteria have a major impact on overall satisfaction. Service Quality and Reliability appear as critical factors, emphasising the need of consistent and dependable services in fostering passenger trust and regular usage. Informational and Infrastructural Support emphasises the value of extensive and easily accessible information systems, as well as sturdy infrastructure, in

improving the user experience. Environmental and Connectivity Aspects emphasise the importance of sustainable practices and seamless connectivity to other forms of transport, resulting in an eco-friendly and efficient network. Finally, physical accessibility and comfort are critical for meeting the different demands of passengers, ensuring that water transport remains a comfortable and accessible alternative for everyone. Collectively, these elements form a complete framework for improving water transport services in Alappuzha, with the goal of increasing passenger happiness and promoting the region's water transport as a dependable and preferred mode of travel.

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