



# Passenger Satisfaction with the Urban Water Transport Service at Ernakulam Boat Jetty

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## Abstract

Urban transport plays a vital role in Kochi city, which is a major centre of trade and commerce in Kerala, the southernmost part of India. Being regarded as one of the favourite destinations for global tourists, the urban water transport can widely extend the scope of tourism. The Ernakulam Boat Jetty serves as a major transport destination for urban water transport in the state of Kerala. It is connected to various popular heritage tourist destinations such as Mattancherry, Fort Kochi, Vypin and Willington Island. Since the ferry passes through the beautiful backwaters of Kochi, it is entertaining for the tourists. This paper analyses the satisfaction level of passengers of boat transport regarding the facilities and services provided. Based on the primary data collected from the passengers, the most noteworthy advantages of choosing ferry transport are it is very economical and time saving. Although these passengers are satisfied with the many facilities offered by the ferry system, there is a critical need for managing hygiene standards and safety protocols. In brief, safety measures and hygienic environment are grave concerns of boat passengers.

(Key words: Boat jetty, Passengers, Satisfaction, Water transport)

## Introduction

Urban water transport provides diversified benefits like, transport, recreational opportunities, drainage services, and regeneration benefits. This way of transportation offers a relaxation for passengers from overcrowded road transportation. One of the major merits involving this mode of transportation is also the fact that, it is environmentally friendly along with being economically affordable. Urban transport plays a vital role in a city like Kochi, which is a major hub of trade and commerce in Kerala, the southernmost part of India. Since Kochi is regarded as one of the most popular destinations for the world tourists, the urban water transport can generate tourism as well as employment generation. The present study aims to capture the opinions of passengers of ferry transport regarding the facilities and services provided, and give emphasise to the advantages of using boat transportation, issues, concerns and their satisfaction level.

## Review of literature

The studies addressing the water transportation system in Ernakulam have assessed in the provision of infrastructure, basic amenities and proposed suggestion for improving the delivery service (Abraham L, 2017, Rakacandran .M, 2018, P. Raveendran et al., 2014). These studies examined the potential for integrating water transport and urban development in Kochi and identified the benefits of such integration, such as reduced congestion and pollution. They proposed several measures to achieve it, such as developing water transport hubs and improving connectivity between water and land transport. These studies highlight that Ernakulam Boat Jetty had several strengths and weaknesses, and there is room for improvement in terms of infrastructure, facilities, and environmental impact. The studies also suggest that there are opportunities for developing water transport and tourism in the region, which can be achieved through targeted interventions and promotion.

While several studies have analyzed the challenges and opportunities of the urban water transportation system in Kerala, there is a lack of empirical studies that focus specifically on the usage and satisfaction of the facilities and services provided at the Ernakulam Boat jetty from the perspective of the users. Most of the existing studies have proposed measures for improving the infrastructure and facilities at the Ernakulam Boat Jetty. In this context, this paper analyses the satisfaction level and advantages and disadvantages of boat transport from the perspective of passengers.

## Methodology

After observing the daily passenger count at the Ernakulam Boat Jetty, at least 900 passengers availed boats service on a daily basis during 2023. A sample of 11 per cent of passengers were selected through random sampling method. The study conducted a primary survey among the ferry passengers who either waited at the boat jetty or travelled in boats starting or ending at Ernakulam boat jetty. Information was collected through well-structured interview schedules through direct personal interviews. While taking the primary survey, many people were in a hurry to reach their destinations and hence did not cooperate as expected. This method suffers from the disadvantage of collecting incomplete information from the passengers as they immediately left the interview on the arrival of their boats

## Hypotheses

- There is no significant difference between the satisfaction level of boat transport users with respect to the conveniences provided in the boat and at the boat jetty.
- There is no significant difference in satisfaction with facilities on the boat and boat jetty between male and female passengers.

## Infrastructural Requirements of a Boat Jetty

The basic requirements for a Boat Jetty are as follows:

**Location:** The jetty should be located in an area to withstand boats from waves and wind.

**Structural design:** The jetty should be designed to protect the boats from the forces of water and wind. The structure should be made of durable materials such as concrete, steel, or timber.

**Access:** The jetty should provide safe and convenient access such as stairs and ramps for passengers and crew to board and disembark from boats.

**Lighting:** The jetty should have well so that passengers can see especially during the night, to provide visibility and safety for passengers and crew.

**Utilities:** Depending on the purpose of the jetty, it may require utilities such as electricity, water, and sewage disposal.

**Navigation aids:** The jetty should be equipped with navigation aids such as buoys, beacons, or lights to help boats navigate to and from the jetty.

**Environmental considerations:** The jetty should be designed in tune with environmental factors, without disturbing marine life.

**Ramp:** A ramp is required for easier loading and unloading of cargo.

**Water supply:** Boat jetties must provide drinking water to the crew and passengers.

**Waste disposal facilities:** Boat jetties should have appropriate waste disposal facilities to prevent pollution of the water body.

**Security facilities:** Boat jetties should have adequate security facilities such as surveillance cameras, security personnel, and barriers to prevent unauthorized access.

Overall, the infrastructural developments of a boat jetty should prioritize safety, accessibility, and sustainability while providing the necessary facilities to support the intended purpose of the jetty.

**Ticketing counters:** Boat jetties should have ample number of ticket counters to sell tickets to passengers. This includes manned counters and automated ticket vending machines.

**Waiting areas:** Boat jetties should have waiting areas for passengers to sit and wait for their boats. Waiting rooms must be equipped with benches and chairs

**Restrooms:** Boat jetties should have restrooms for passengers and crew to use. This includes separate facilities for men and women, as well as accessible restrooms for persons with disabilities.

Information displays: Boat jetties should have information displays to provide passengers with real-time information on boat schedules, delays, and cancellations.

Parking facilities: Boat jetties should have adequate parking facilities for passengers.

Safety equipment: Boat jetties should have safety equipment such as lifebuoys, fire extinguishers, and first aid kits to ensure the safety of passengers and crew

### Significance of Ernakulam Boat Jetty

Ernakulam Boat Jetty is a major transportation hub in the city of Kochi, located in Ernakulam district of the state of Kerala, the southern part of India. Boat transportation from this jetty must be given due consideration for various reasons given below. Historical records narrated how well the canals and waterways enriched the trade and commerce of Kochi city. Earlier, a good section of the population living here had used water ways on a daily or weekly basis. But in course of time, the popularity of waterways for transport declined after the commissioning of Goshree bridges connecting the three major islands.

Under the aegis of Kerala State Water Transport Department, the Ernakulam boat jetty connects various parts of the city and its suburbs via waterways. The residents of islands like Vypin, Fort Kochi, Wellington Island and Mattanchery rely heavily on boats for their daily commute and so boat service is essential in their daily life. Kochi ferry system transport passengers and goods to urban areas at a very cheap rate from the early morning to late evening approximately 10 PM. At least more than 900 people use water transportation on a daily average. Boat services starting from the jetty is a great treat to tourists and it offers a unique experience of exploring the backwaters of Kerala. The jetty serves as a gateway to favourite tourist destinations like Fort Kochi and Mattancherry. Boats serve as the cheapest means of transport to laymen, students and the working class as well as carrying cargo, especially perishable goods like fish and vegetables, from the nearby islands to the mainland markets. During the situation of emergencies, like floods, boats from the jetty were used to rescue people from the waterlogged areas.

### Passengers of Boat Transport

This survey among the passengers showed that the majority around 65 per cent of passengers in the boat were females. Other Backward Caste shared 52.6 per cent of the seats in the vessel and jetty. More than a quarter of the passengers used boat transport for work or study purpose on daily or weekly basis. This highlighted the fact that water transport was mainly accessed by the marginalised communities of society. Among the total number of passengers, nearly 20 per cent used boats on a daily basis (Table 1)

**Table 1: Frequency of Usage of Boats**

Usage of Boats	Frequency	Per cent
Daily	18	18.6
Weekly	9	9.3
Monthly	19	19.6
Quarterly	24	24.7
Yearly	27	27.8
Total	97	100

The majority of the passengers belonged to APL background. Occupation-wise data showed more than half of the users of the ferry were students (55.7 per cent) followed by workers engaged in the private sector (Table 2). Nearly half of them had the regular practice of using public transport such as bus/train/metro/boat for commute.

**Table 2 Occupation of the Respondents**

Occupation	Frequency	Per cent
Government Sector	5	5.2
Private Sector	21	21.6
Self-Employed	4	4.1
Unemployed	13	13.4
Student	54	55.7
Total	97	100

It can be inferred that at least 500 people used waterways to reach Fort Kochi. More than half of passengers' destination was Fort Kochi. Ernakulam city was the major destination of nearly one fifth of those who boarded from other islands (Table 3)

**Table 3 Destinations of Travel**

Destinations from Boat Jetty	Frequency	Per cent
Ernakulam	17	17.5
Vypin	4	4.1
Fort Kochi	51	52.6
Willington Island	9	9.3
Others	16	16.5
Total	97	100

### Satisfaction Level of Boat Passengers

This section analyses the satisfaction level of passengers who use the ferry on daily/weekly/monthly/yearly basis. It also looks into the advantages and disadvantages of using ferries as a daily mode of transport. The additional costs and perceived gains incurred by them while using boats were analysed here. Using Likert scale analysis, satisfaction level of passengers was assessed through seeking their opinions regarding the facilities inside the vessel and at boat jetty. The scale was constructed with values 1= Very much dissatisfied, 2= Dissatisfied, 3= Neither satisfied nor dissatisfied, 4= Satisfied, 5= Very much satisfied. The respondents expressed their opinions on facilities in the boat such as seating arrangement, sanitation facilities safety measures in the boat and the services provided by the crew members inside the vessel. The mean value of each response is reported in Table 4. While passengers expressed high levels of satisfaction with the seating arrangements and services of crew members, safety measures and sanitation facilities showed lower mean scores highlighting the critical need for improving hygiene and safety protocols (Table 4).

**Table 4 Mean Value of Satisfaction from Facilities on Boat**

Satisfaction Level	Mean value	Tota no. of respondents
Seating facilities	3.0	97
Boat journey	3.3	
Crew members in Boat	3.4	
Safety measures	2.9	
Sanitation facilities	2.5	

The mean value of responses provided by the passengers regarding the facilities inside the boat jetty on waiting area, washroom, ticket counter, punctuality of schedules, interaction of staff and cleanliness were given in table 5. They were much satisfied with these facilities, except with the cleanliness in boat jetty and its premises. In brief, safety measures and a hygienic environment were grave concerns of boat passengers.

**Table 5 Mean Value of Satisfaction from Facilities on Boat Jetty**

Satisfaction Level	Mean value	No of Respondents
Waiting area	3.5	97
Washrooms	2.5	
Ticket counter	3.4	
Punctuality of schedules	3.6	
Interaction of staff	3.7	
Cleanliness	3.0	

In the present study, one sample test was applied to test any significant difference between the satisfaction level of ferry passengers with respect to the facilities provided in the boat and at the boat jetty (Table 4 and Table 5). The median values of 3.20 and 3.33 showed a moderately high level of satisfaction with the facilities on boats and boat jetty. The null hypothesis states that there is no significant difference in mean satisfaction regarding the conveniences in the boat transport and the boat jetty. Since the P values are below the 1 per cent level of significance, the null hypothesis stating there is no significant difference in satisfaction regarding the conveniences in the boat transport and the boat jetty, indicating that the findings are highly significant (Table 6).

The mean satisfaction score regarding the facilities in the boat is 3.20 which is higher than the test value of 3. Since the p-value is less than 0.001, the result is statistically significant at the 1% level indicating that the respondents are significantly satisfied with the facilities in boats. The mean satisfaction score regarding the facilities in the boat jetty is 3.29 which is higher than the test value of 3. Since the p-value is less than 0.001, the result is statistically significant at the 1% level, indicating that the respondents are significantly satisfied with the facilities in boats.

**Table 6 Satisfaction with the Facilities in the Boat and Boat Jetty (One sample test)**

Satisfaction	Sample	Mean	Median	SD	SE	P value
Facilities in Boat transport	97	3.20	3.20	0.479	0.0486	<.001*
Facilities in Boat Jetty	97	3.29	3.33	0.492	0.0500	<.001*

$H_a: \mu \neq 3$

An independent sample test was used to find out any significant difference in satisfaction with facilities on water transport between male and female passengers. Both the male and female respondents reported moderate satisfaction with the facilities provided on the boat and at the boat jetty. Although female passengers showed slightly higher mean satisfaction in both cases, this observed difference was not statistically significant at 5 per cent level while applying the samples t-test. To conclude, the difference in the mean satisfaction between males and females is not statistically different and gender was not a significant factor in the satisfaction analysis (Table 5).

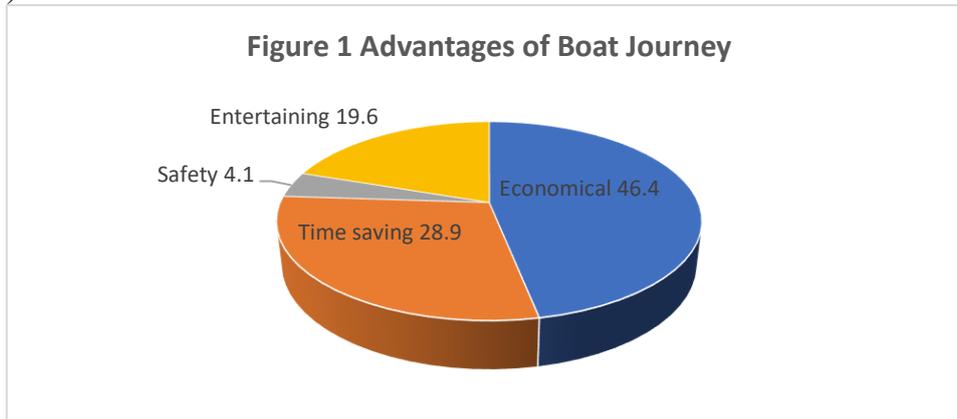
**Table 5 Satisfaction with the Facilities in the Boat and Boat Jetty: Gender-wise (Independent sample test)**

Satisfaction	Group	Sample	Mean	Median	SD	SE	P value
Facilities in Boat transport	Female	63	3.26	3.20	0.438	0.0552	>0.075
	Male	34	3.08	3.10	0.533	0.0914	
Facilities in Boat Jetty	Female	63	3.34	3.33	0.491	0.0619	>0.216*
	Male	34	3.21	3.17	0.489	0.0839	

$H_a: \mu \text{ Female} \neq \mu \text{ Male}$

## Advantages and Disadvantages of Boat Transport

This section analyses the advantages and disadvantages of using boats as means of transport. The majority around 46.4 per cent reported that the greatest advantage of boat transportation was that it was very economical compared to other public modes of transport. Nearly 30 per cent reported that it considerably reduced travel time to reach their destinations. Almost 20 per cent of passengers also found it extremely entertaining to travel along the waterways without air and sound pollution while enjoying the beauty of Kochi (Figure 1).



The waterway distance between from Ernakulam boat jetty to Fort Kochi is 4 km and it takes 20 minutes while, the distance by road is 13.5 kms which takes 35 to 45 minutes. The same distance covered by road is congested and polluted. The maximum ticket expense of Boat Transport towards Fort Kochi is rupees 6 only. The regular passengers opined that if they had used the road only, they would have spent on an average, on one side, rupees 66 for reaching the same destination. The additional cost of 97 passengers is analysed in terms of the average basis provided, if they do not use other means of transportation in lieu of boat transportation to reach their destinations. In brief, on average a passenger saves rupees 120 per day while using waterways. So, it can be inferred that on an average a passenger saves rupees 60 when they travel one side while using boat transportation. So, per day, an average passenger saves rupees 120, while he/she uses Boats for travelling. Here boat transport costs one tenth of the cost of public transport on road.

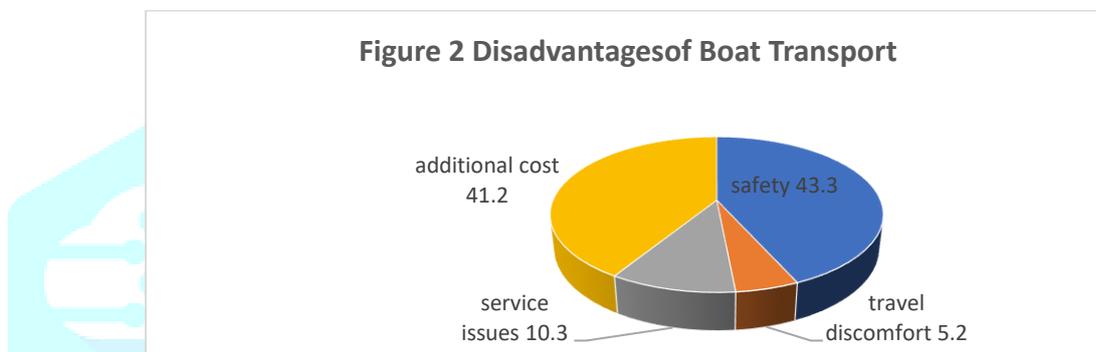
**Figure 2 Distance between Fort Kochi and Ernakulam Boat Jetty by Roadways and Waterways:  
Google Map**



While the boat service saves travel time and money, the commuters had to rely on feeder services to reach destinations or metro/bus stations. The major disadvantage reported by half (51.5 per cent) of the passengers regarding boat transport was they had to bear additional cost and time for reaching the boat jetty. This section analyses the average additional cost incurred by the passengers to reach the boat jetty. Nearly 40 per cent of them used road network to reach boat jetty. Among those who used road network for reaching jetty, majority used public transport by paying rupees 10 only to reach jetty. There were people who paid at least rupees 50 for accessing the jetty. The average value of additional cost paid by 39 passengers for accessing jetty was rupees 45.30. This amount was estimated from the primary data showing visibly high variations in additional costs reported.

**Table 6 Additional Cost Paid by the Passengers to Reach Boat Jetty**

Amount (Rs.)	No of passengers	Per cent of passengers who pay additional cost	Total additional cost	Average additional cost (Rs)
<50	26	66.7	554	21
50-99	8	21.0	452	51
100-149	3	7.7	340	113
150-199	1	2.6	170	170
200-249	0	0.0	0	0
>250	1	2.6	1	250
Total number of passengers who use road =39		100.0	Total additional cost: 1766	Average amount of additional cost: Rupees 45.30

**Figure 2 Disadvantages of Boat Transport**

Almost half of the passengers expressed their concern over the safety protocols introduced on board. Yet another discouraging factor reported was the additional cost incurred by them for reaching the boat jetty. A considerable number of them raised the need to increase the number of ticket counters. The most frequently demanded need was for improved hygiene standards in ferry services, with many respondents specifically emphasizing the need for clean and hygienic bathroom facilities. Passengers also found the premises of the Jetty very unclean and expressed their views on improving the cleanliness of the Jetty. Despite numerous private buses were operating on the Ernakulam Fort Kochi route, the respondents prefer water transport because it was cheaper and faster.

### Conclusion

Waterway transportation offers a relaxation for the passengers from overcrowded road conveyance. One of the major merits involving this mode of transportation is also the fact that, it's environment-friendly along with being economically affordable. Water Transportation sector plays a vital role in a city like Ernakulam, where the waterways constitute a large part of the city. The present study aimed to capture the opinions of passengers of ferry transport regarding the facilities and services provided, and give emphasis to the advantages of using boat transportation, issues, concerns and their satisfaction level. The major advantage of boat transport was it is very cheap, affordable, time saving and the passengers were least affected by pollution and city. While majority of passengers expressed high levels of satisfaction with the seating arrangements and service of crew members, they were least impressed with safety protocols highlighting the critical need for improving them. They were also less satisfied with the cleanliness in premises of boat jetty. If safety protocols and hygiene standards were maintained, water transport would have high potential for future growth by attracting world tourists to enjoy the beauty of backwaters of Kerala. Given the heavy traffic congestion on roadways, further studies on the prospects of water transport could make a valuable contribution to the quality of people's life in Kerala.

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