

TRAFFIC ANALYSIS STUDY

The existing water based transit system has been losing its ridership to the road based motorized transit systems due to the lack of infrastructure and the irregular frequencies of the existing ferry services. Reconnaissance surveys and interaction with the local communities at various levels has led to the understanding that water transport cannot be viewed in isolation and its inclusion at all levels with the other modes of transport functional within the city is required.

1.1 Primary Data Analysis

Based on the review of the secondary data and after identification of data gaps, the following primary surveys were conducted:

1. Jetty wise Boarding and Alighting Count Survey
2. Water Transport Passengers Origin and Destination cum Opinion Survey
3. Household Surveys

1.1.1 Inferences from Boarding and Alighting Survey

The maximum count was recorded at Ernakulam Jetty, followed by Fort Kochi; whereas the minimum count was recorded at Varapuzha. It was observed that the peak hour boarding and alighting approximately constitutes 34% of the daily ridership.

1.1.2 Inferences from Origin-Destination cum Opinion Survey

The following observations were drawn from the Origin-Destination cum Opinion Surveys conducted at the selected 15 jetty locations.

- The average monthly income of the ferry passengers is observed to be ` 12,500/-
- The average monthly expenditure on transport by ferry passengers is observed to be ` 625/-, which is 5% of their average monthly income.
- 41% of the ferry passengers do not own vehicles, as they mainly constitute of students, unemployed, housewives, retired people and others.
- 81.36% of the ferry passengers use the ferry services operated in Kochi on a daily basis.
- 55.56% of the passengers use the ferry system exclusively for work and business purposes.
- Majority of the ferry passengers use the public transport (bus) as an alternate mode of transport. They use the alternate modes primarily due to the irregular operations of the ferry systems and lack of proper access to the jetty locations being the major reasons, followed by easily available modes for emergency purposes and personal uses.
- Major Origin-Destination Pattern: Based on the Origin Destination Survey conducted at the Jetty Locations, it was observed that the maximum movements were observed between Mattancherry-Fort Kochi, Ernakulam-Wellington, Ernakulam-Fort Kochi, Thevara-Nettor etc.

1.1.3 Observations and Conclusions from Household and Opinion Survey

Based on the Household Survey, the following Inferences were drawn:

- 66.3% of the households have 3 to 4 members; with the average household size as 3.4.
- 54.8% of the households have a minimum of one vehicle which is predominantly a 2 wheeler.
- 36.5% of the individuals are over 40 yrs of age followed by 20.6% of the individuals who fall within the age group of 20 to 30 yrs.
- 25.9% of the total respondents are private employees, followed by 23.7% who are housewives.
- 54% of the trips are performed for work and business purposes.
- Based on the opinion survey, it was observed that 72% of respondents are willing to shift if there is an assured saving in travel time upto 15 mins in comparison to the current mode of travel and 75% of the respondents are willing to shift to good water transport, if there is a considerable saving time.
- It was also observed that 54% of the respondents want the same fare to be retained for the improved water based transit system.

1.2 Travel Demand Assessment

This section discusses the travel demand assessment for water transport in Kochi. Travel demand assessment aims at establishing the spatial distribution of the travel explicitly by means of an appropriate system of zones for water transport in Kochi.

1.2.1 Zoning System

The study area comprises of Greater Cochin Development Authority (GCDA), Goshree Islands Development Authority (GIDA) and Corporation of Cochin along with 9 municipalities, 20 village Panchayats spread over an area of about 632 Sq km. However the aim of the current study is to revive the traditional water transit system in Kochi, hence, for the initial assessment island communities towards the western part of the mainland have been considered.

Kochi city region is categorized into 143 Traffic Analysis Zones (TAZ) as shown in Figure 1. Though the zoning system has been adopted for the entire Greater Kochi Region, concentration of the assessment has been in the jurisdiction of the Municipal Corporation of Kochi and few surrounding Gram Panchayats of the Island communities. Ridership for the proposed water transit system is estimated as part of this exercise. The proposed water transit system was integrated with current and operational jetties to capture the existing and potential ridership.

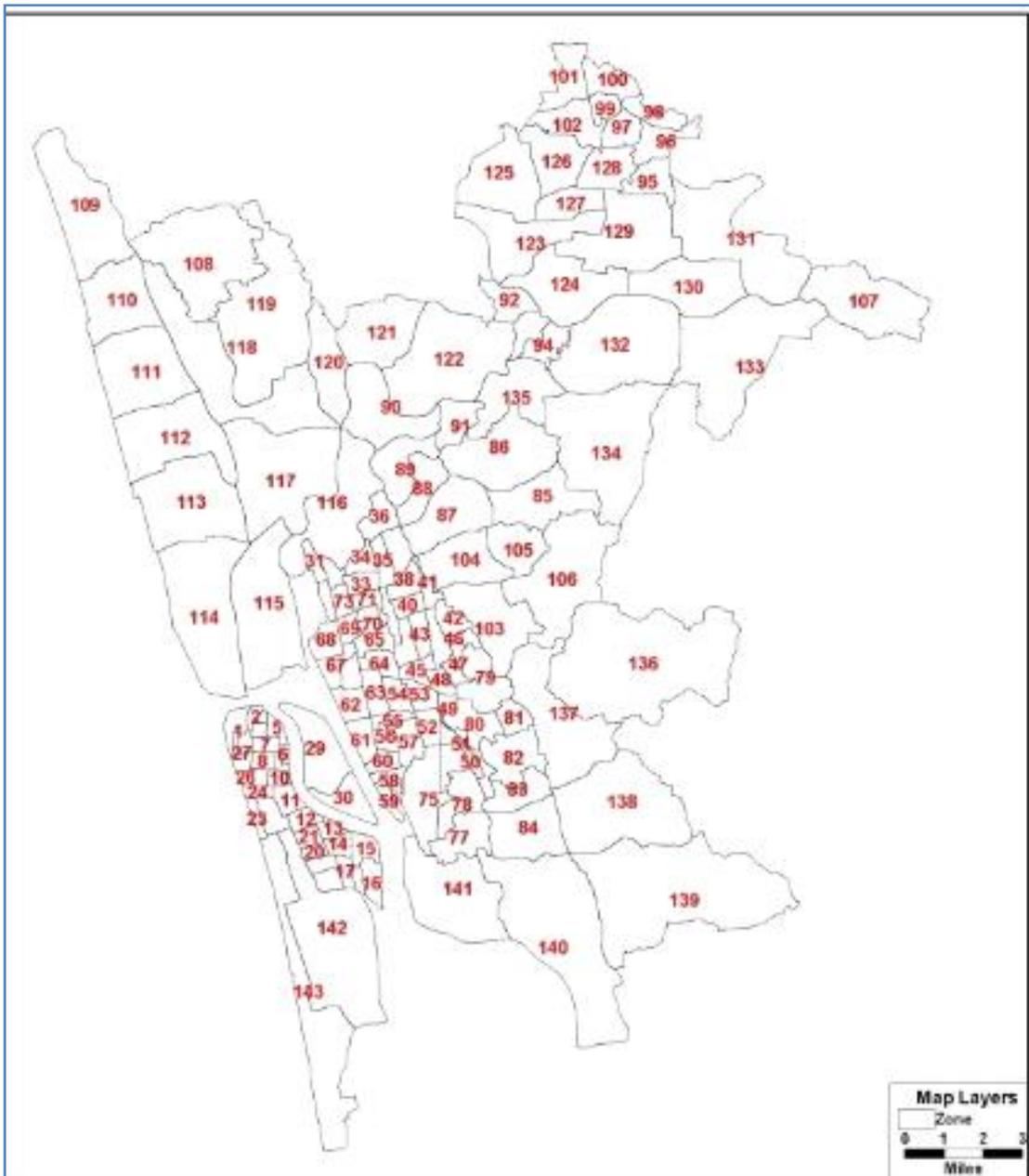


Figure 1: Traffic Analysis Zones

1.3 Hub and Spoke Network Model

In the past, the transportation and distribution industry was guided by the principles of point-to-point or direct-route operations. As technology has developed, the logistics sector has found faster and more cost-effective ways of shipping freight. The hub-and-spoke model (refer Figure 2) was born from the industry's efforts to develop more efficient networks. Hub-and-Spoke Systems (HASS) are the efficient and competitive route networks and often adopted in the industries such as transportation and telecommunication. It results in lower total network costs and therefore strong competitive edges.

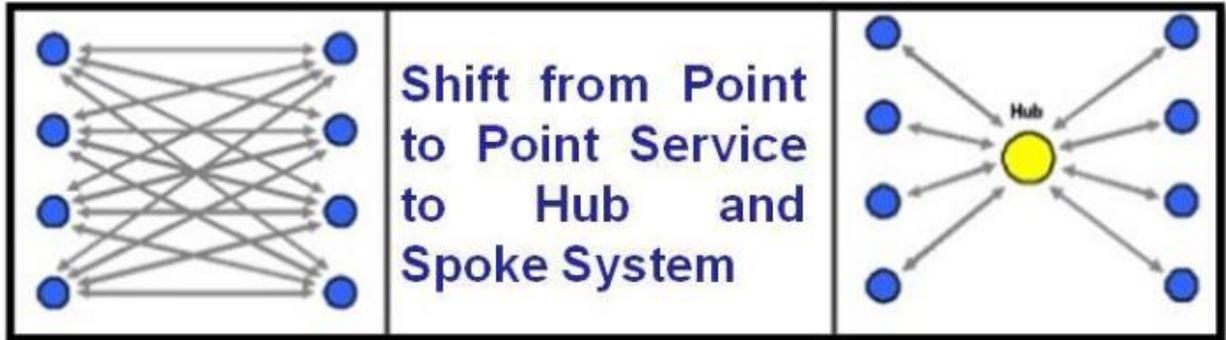


Figure 2: Hub and Spoke System

The western part of the city of Kochi is surrounded by numerous inhabited islands like Kothad, Moolampilly, Korankota, and various other smaller islands. These islands are majorly residential islands with limited economic activities and have access to the mainland of Ernakulam, only through the ferry systems. However, most of these jetties are poorly equipped or are presently non-functional.

The hub and spoke system has been proposed for the water transportation system in which certain major islands can function as hubs with one major boat jetty developed as a hub and the neighbouring smaller islands and jetties as the spokes which would be connected to the hub. The Ernakulam boat jetty would be developed as a mainland hub and ferry routing can be planned and designed in a way so as to ensure connectivity at regular intervals to the main islands. The jetties in the smaller islands are proposed to be revived and with the help of ferry services, they would be connected to the Ernakulam mainland boat jetty. This kind of a public transportation network for the city of Kochi will help in providing a seamless, efficient and people-centric public transportation system. This system adopted for Kochi is termed as **“One Island One Boat Hub”** concept.

1.4 Principles for selection of Water Transport Routes

Kochi is greatly dependent on public transportation for its mobility needs with over 51% of passengers opting for public transport. The level of service delivery of the ferry system has failed to keep up with the growing expectations of the citizens. Currently, the passenger water transport system is being operated by the State Water Transport Department.

At present there are around 12 local bodies within the Kochi city region, few of these local bodies have licensed water transport/ferries to various locations. With the dominance of the motorized transport, many of the operational routes have been terminated and jetties abandoned. Many of the identified jetty locations have integration with road based transport systems, which needs to be upgraded with better facilities.

There is a potential demand for travel between the island communities and the mainland. Maximum demand of around 1,100 to 6,500 passengers has been observed for the ferry transport, which had been predominantly concentrated around Ernakulam, Fort Kochi, Mattancherry, Wellington Island, Elamkunnappuzha, Njarackal and Kumbhalam.

The IWT sector is an investment-sensitive sector. The costs involved are cost of the vessels, fuel costs, crew salaries and maintenance costs. In order to keep the ferry services, assured patronage from the citizens is pre-requisite. Keeping this in view, it is decided to introduce the identified 16 routes in a phased manner over a period of 4 years between 2016-2019, considering the high demand routes to be introduced first and low demand routes in the subsequent years. Based on the above parameter, 7 routes would be introduced in Phase I (2016 – 17) and additional 9 routes would be introduced in Phase II (2018-19).