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A STUDY ON CHALLENGES AND OPPORTUNITIES OF INTEGRATING WATER METRO WITH OTHER MODES OF PUBLIC TRANSPORT IN KERALA

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ABSTRACT:

The Kerala Water Metro is a pioneering initiative in water-based urban transportation in India. This study examines the integration of the Water Metro with other public transport systems in Kerala, highlighting challenges and opportunities. By analyzing passenger perceptions, operational barriers, and economic impacts, the research proposes strategies for seamless connectivity and enhanced user experiences. The study further explores how the Water Metro can serve as a model for similar initiatives in other coastal regions. It emphasizes the environmental benefits and discusses the socio-economic advantages of integrating water-based transport with urban transit systems. With growing urbanization, the relevance of sustainable transport solutions like the Water Metro is increasingly critical. The findings are expected to provide valuable insights for policymakers and stakeholders in the transport sector.

Key Words: Water Metro, Public Transport, Integration, Urban Connectivity, Kerala

INTRODUCTION:

The Kerala Water Metro, a unique public transportation system, aims to connect coastal and island communities to the mainland through eco-friendly watercraft. Effective integration with other modes of transport—buses, trains, and auto-rickshaws—is crucial for optimizing its efficiency and accessibility. This study investigates its role in Kerala's transport ecosystem. The Water Metro's potential to reduce road traffic congestion and pollution makes it a key player in sustainable urban mobility. Moreover, it caters to the commuting needs of marginalized communities in island regions, offering affordable and efficient transport. By linking urban and peri-urban areas, the Water Metro also enhances economic activities. This research delves into the challenges faced in achieving seamless integration and explores opportunities to address them.

NEED OF STUDY:

- To evaluate the integration of the Water Metro with other transport modes.
- To identify challenges in achieving seamless connectivity.
- To explore opportunities for improving multi-modal transport systems

OBJECTIVES:

1)To assess the current level of integration between the Water Metro and other public transport systems.
2)To identify challenges in operational, infrastructural, and policy aspects.
3)To explore opportunities for enhancing user experience and connectivity.

LITERATURE REVIEW:

In this study, researchers reviewed various works focusing on the importance of public transportation and its integration into multi-modal systems.
Dr. K. Saravana (2016) explored the topic "Improving the Public Transport System of Kerala: A Study Based on Passenger Satisfaction." This work highlighted critical factors influencing passenger experiences and system efficiency.The Centre for Public Policy Research (2016) conducted research on "Challenges to Private Participation in Public Transportation: A Case of Kerala," which examined the barriers to effective coordination between public and private entities.Vini M.S. and Sree Krishnan P. (2017) analyzed the "Performance of Multi-Modal Transport Systems in Kerala." Their findings revealed gaps in infrastructure and operational strategies essential for integration.
Dr. Lakshmi (2018) studied "Service Quality in Kerala's Public Transport," emphasizing the need for policy reforms to enhance commuter satisfaction and improve connectivity between different modes of transport.

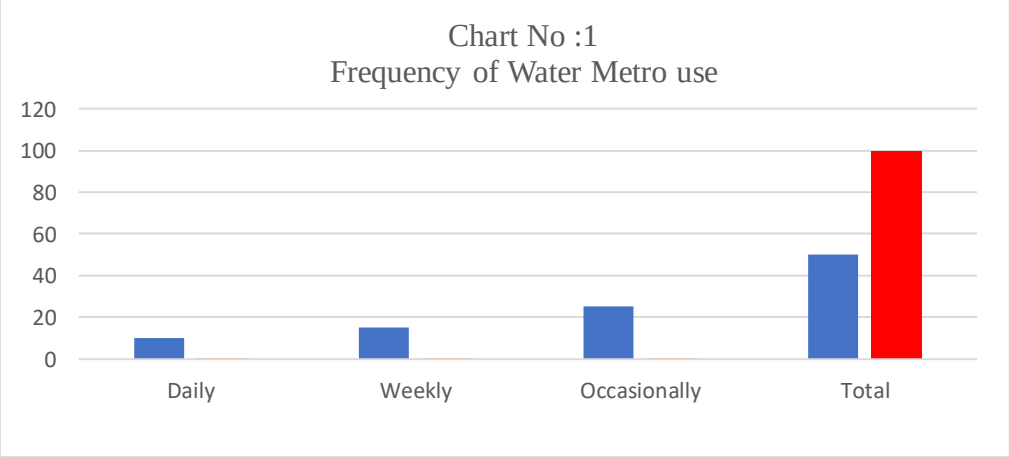
RESEARCH METHODOLOGY

Both Primary and Secondary data to be used to complete this study.
Primary Data: Primary research consisted of collecting original data through interviews with Water Metro passengers, transport operators, and stakeholders. The research employed structured questionnaires and observation methods at key terminals to understand integration challenges and user satisfaction.
Secondary Data: Secondary data was gathered from published resources such as government reports, transport department publications, scholarly articles, and case studies. These sources supported the primary findings and provided insights into best practices for multi-modal integration.
A total of 50 respondents were selected randomly from frequent Water Metro users and other public transport passengers in Kochi and nearby regions. This sample enabled a comprehensive analysis of the integration's operational and user-centric aspects.

DATA ANALYSIS AND INTERPRETATION:

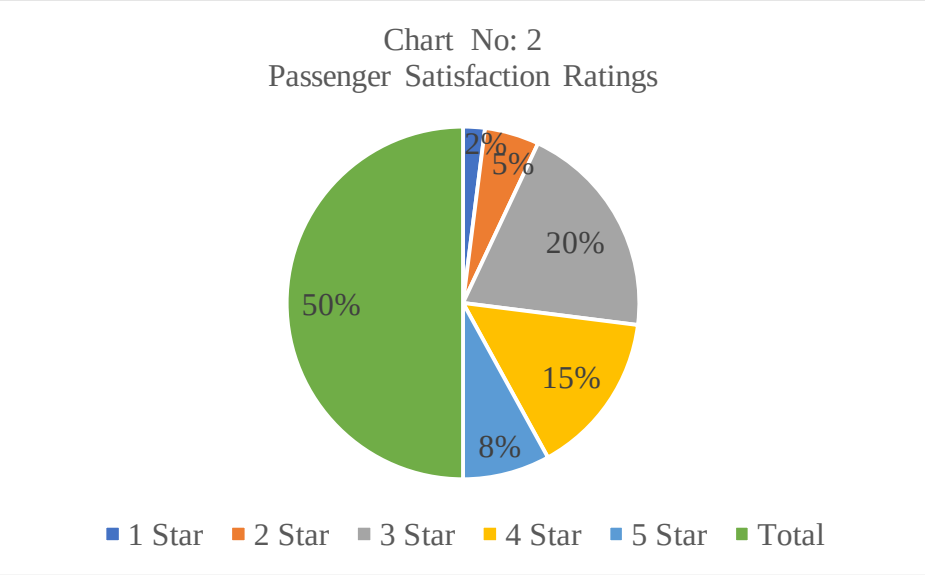
Table no:1
Frequency of Water Metro Use

USE	NUMBER OF RESPONDENTS	PERCENTAGE
Daily	10	20%
Weekly	15	30%
Occasionally	25	50%
Total	50	100



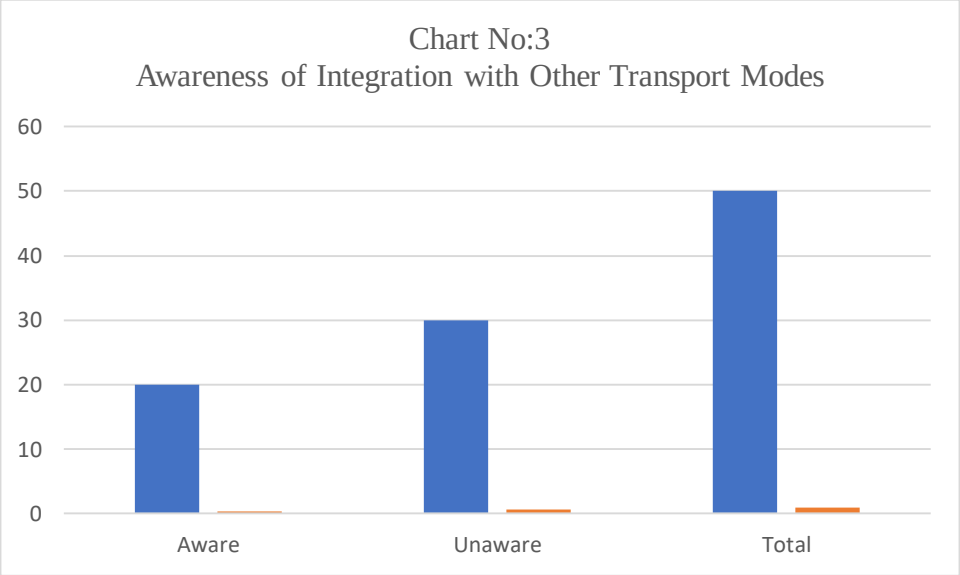
Interpretation: Half of the respondents use the Water Metro occasionally, indicating its limited integration into daily commuting routines.

Table no: 2 **Passenger Satisfaction Ratings**		
STAR RATING	NUMBER OF RESPONDENTS	PERCENTAGE
1 Star	2	4%
2 Star	5	10%
3 Star	20	40%
4 Star	15	30%
5 Star	8	16%
Total	50	100



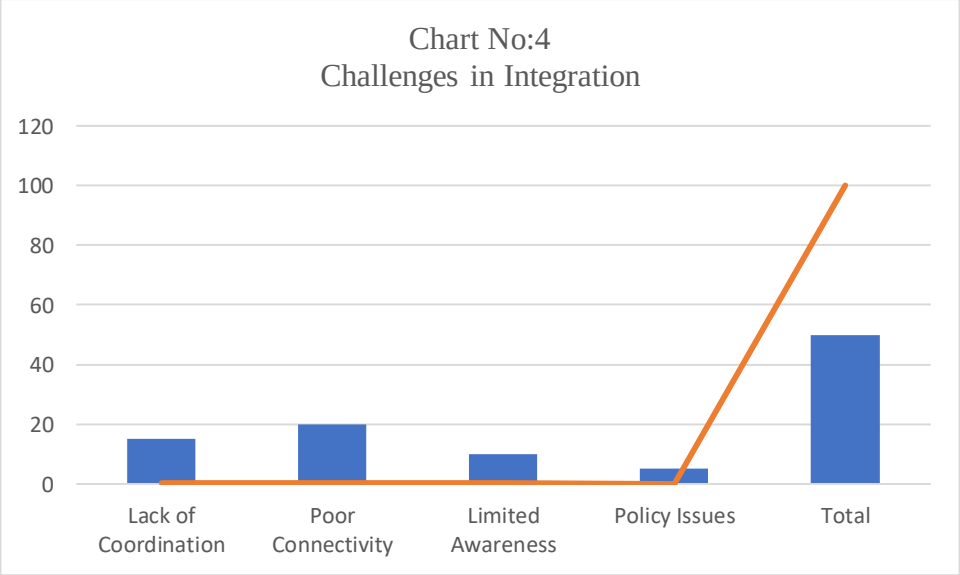
Interpretation: Majority (40%) rate the Water Metro at 3 stars, indicating moderate satisfaction.

Table no :3 **Awareness of Integration with Other Transport Modes**		
AWARENESS LEVEL	NUMBER OF RESPONDENTS	PERCENTAGE
Aware	20	40%
Unaware	30	60%
Total	50	100%



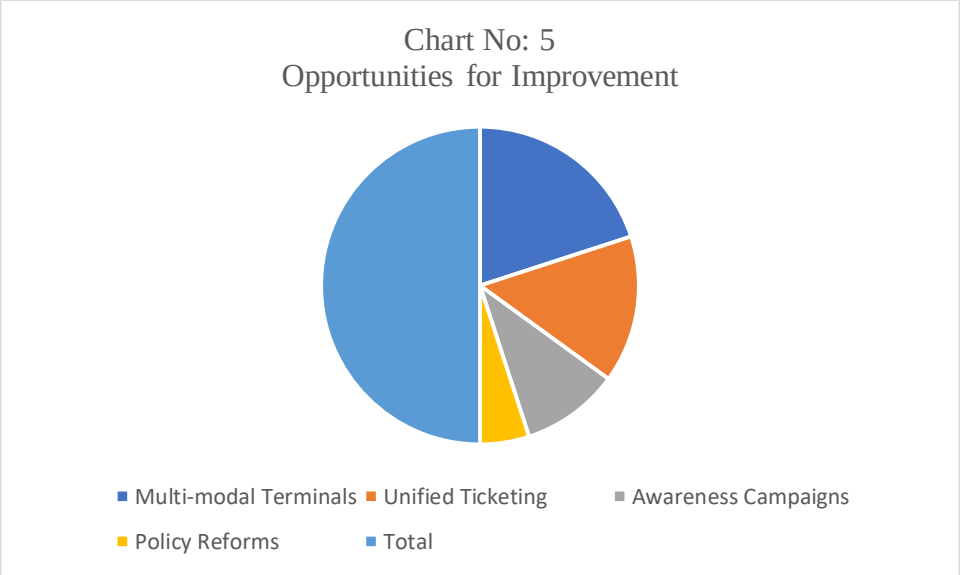
Interpretation: 60% of respondents are unaware of integration options, underscoring the need for better communication and awareness campaigns.

Table no: 4 Challenges in Integration		
CHALLENGE	NUMBER OF RESPONDENTS	PERCENTAGE
Lack of Coordination	15	30%
Poor Connectivity	20	40%
Limited Awareness	10	20%
Policy Issues	5	10%
Total	50	100



Interpretation: Poor connectivity (40%) and lack of coordination (30%) are the most significant barriers to integration.

Table no: 5 Opportunities for Improvement		
OPPORTUNITY	NUMBER OF RESPONDENTS	PERCENTAGE
Multi-modal Terminals	20	40%
Unified Ticketing	15	30%
Awareness Campaigns	10	20%
Policy Reforms	5	10%
Total	50	100



Interpretation: Multi-modal terminals (40%) and unified ticketing (30%) are key opportunities for enhancing integration.

FINDINGS:

- The Water Metro is primarily used for occasional travel.
- Passenger satisfaction is moderate, with scope for improvement.
- Awareness of integration with other transport modes is low.
- Major challenges include poor connectivity and lack of coordination.
- The Water Metro has significant potential to revolutionize coastal urban transport if integration is prioritized.
- Existing policies need to address infrastructural bottlenecks and enhance collaboration between transport authorities.

SUGGESTIONS:

- Develop multi-modal transport hubs for seamless transitions between modes.
- Implement a unified ticketing system across all transport modes.
- Launch awareness campaigns to educate the public on integration options.
- Address policy and infrastructure gaps to enhance coordination.
- Strengthen partnerships between government agencies and private stakeholders to improve service efficiency.
- Introduce incentives for commuters to use integrated transport systems, such as discounts or loyalty programs.

CONCLUSION:

The integration of the Water Metro with other public transport systems is essential for its success. Addressing challenges and leveraging opportunities can significantly enhance urban mobility in Kerala, making the Water Metro a model for sustainable and efficient public transport. Furthermore, promoting eco-friendly and inclusive transit options ensures long-term benefits for the environment and society.

Policymakers must prioritize collaboration and innovation to create a truly multi-modal transport network. As urbanization continues, Kerala's Water Metro can inspire similar projects across India and beyond, setting a benchmark in sustainable transport solutions.

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