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"Metro-Neo An Innovative Transport System" - A Case Study of Bhubaneswar

Subham Khamari[1], Mr. Bhabani Shankar SA[2], Bijay Baibhav Ray[3]
[1]*Research Scholar,* [2]*Assistant Professor,* [3]*Guest Faculty School Of Infrastructure And Planning, Odisha University Of Technology and Research Ghatikia, Bhubaneswar, India*

Abstract: This article looks at the several stages of expansion of Bhubaneswar, a city in eastern India. Because of infrastructural improvements, economic growth, and population expansion, Bhubaneswar has seen fast urban growth. Growth is foreseen mainly in the transportation system, which is public transportation that is quite suppressed over the years leading to various issues like-traffic congestion,daily ridership growth patterns,accidents, and economic and environmental crisis. Thus it is essential to ramp up and optimize mobility services.The focus has to be on promoting green, clean mobility. Electric vehicles are already on high priority on the government's agenda.Further, mobility services should be convenient to access by the public and secure, even for the fringes of the demographic, including women, children and the elderly.

Keywords: MetroNeo / Bhubaneswar / Transit / Ridership / Connectivity / Articulated / Connectivity / PHPDT / Congestion

I. INTRODUCTION

Metro Neo is a low-cost, energy-efficient, and eco-friendly urban transport system designed for tier 2 and tier 3 cities. It operates on the road, drawing traction power from overhead wires. The system is seamless, fast, reliable, and cost-effective, offering a travel experience comparable to Metro systems. It features an articulated/bi-articulated trolleybus system with overhead electric traction, air conditioning, automatic door closing, level boarding, comfortable seats, and an electronic information system. The system can be upgraded to Light Metro with incremental cost input in the future.

II. NEED OF THE STUDY

This research will demonstrate how the city is interconnected to each and every space through the guided system fulfilling the last mile and first mile connectivity. Which will help reduce the travel duration, traffic congestion and smooth flow in the ridership pattern To compare and analyze the population growth,daily ridership rate,age group,connectivity,and traffic in transit routes.To study the effectiveness of the resources that can be used to cater the neo services in near future and analyze the cost benefit.To study the last mile and first mile services within the city.To identify the major and minimum priority areas so that metro neo services can be an option to cater the above transit routes.

III. RESEARCH METHODOLOGY

The following steps are followed in this study:

1) After the background study and issues identification, the aim and objective was finalized.
2) Literature review was done by doing a thorough analysis of previous research and written works concerning Metro-Neo transportation systems. Findings were done relating to the main variables affecting Travel patterns,ridership patterns, ROW width,and many more.
3) Data collection was done by primary and secondary data collection methods. In-person observations were made at important transit hubs (subway stations and bus stops, maximum priority zone and minimum priority zones). Number of passengers, the frequency of services, and the problems they are having were noted down. Questionnaires and Surveys were done to get feedback on the effectiveness of services of metro-neo from people who use public transportation, including inquiries regarding the availability, traffic congestion, dependability, and frequency of public transit.
4) Data was analyzed to understand whether people are requiring this service or not.To analyse the issues of daily ridership patterns,congestion and last mile first mile connectivity.To analyse the time frequency travelers are requiring.
5) Gap analysis was done by determining the areas with gaps in accessibility caused by inadequate coverage or premature service termination. Situations were noted in which. This will draw attention to differences in how different demographic groups are able to access services.

IV. FIELD OF STUDY

Bhubaneswar, the capital of Odisha, is situated in Khordha district and covers 186 sq Km. It has a population of 0.88 million and has grown at a 34.51% rate between 2001 and 2011. Bhubaneswar is connected via National Highways 16 and 316,

Major corridors were selected based on activity corridors. Demand and available ROW.The availability of ROW was the major aspect for deciding the grade alignment for the corridor.

The city center and much of the BMC area.The inter-city connectivity

length at-grade is-24 km which is from west [ghatikia towards north covering nalco square,damana,infocity. and from airport from east covering master canteen,ag square, kalpana square,raj bhawan, to jaydev vihar square and vanivihar square

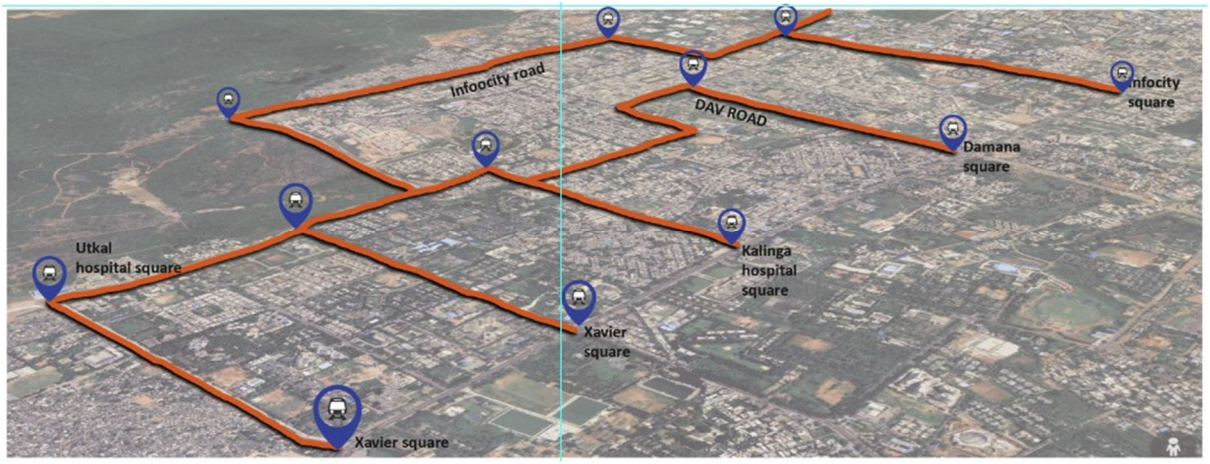

Figure 1 showing Bhubaneswar and identified study zones.

ROUTE A -SHOWING THE 12 NO OF PROPOSED STATION AT TOTAL STRETCH OF 15KM

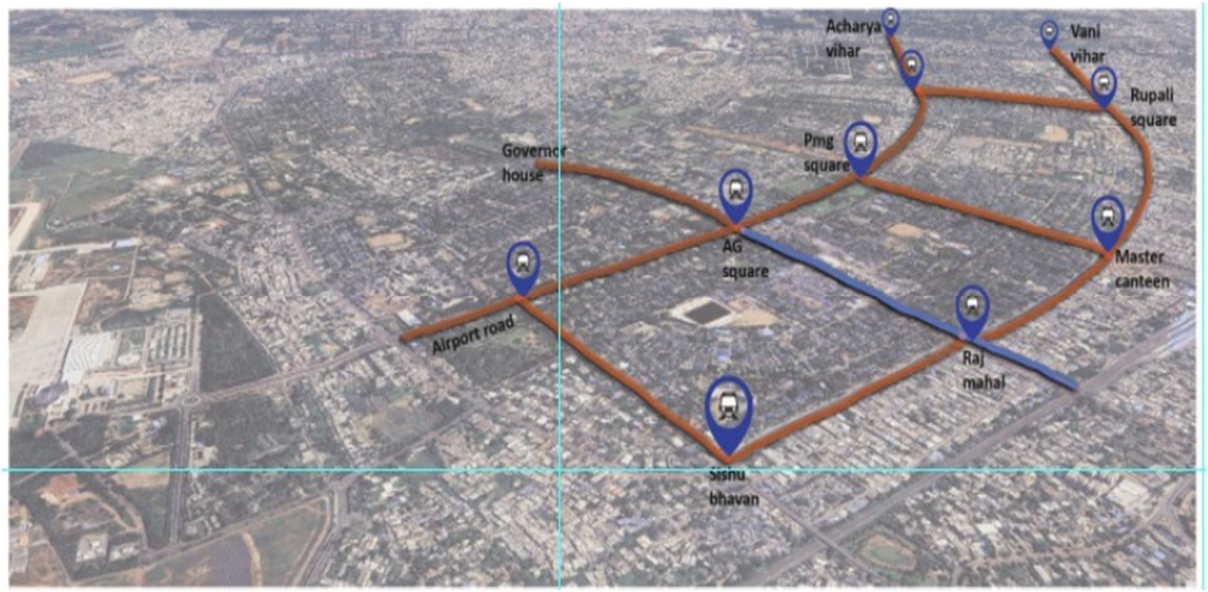

Figure 2 showing Bhubaneswar and identified study zones.

ROUTE B -SHOWING THE 10 NO OF PROPOSED STATION AT TOTAL STRETCH OF 13KM

V. OUTCOMES

Mainly the travelling duration will be reduce to half a time as compare to other transportation system in transit routes, safety and security will be the most concern,metro neo service in Bhubaneswar city act as a feeder bus system to the proposed metro rail system which will be environment friendly and economical as compare to the full fledge metro rail system

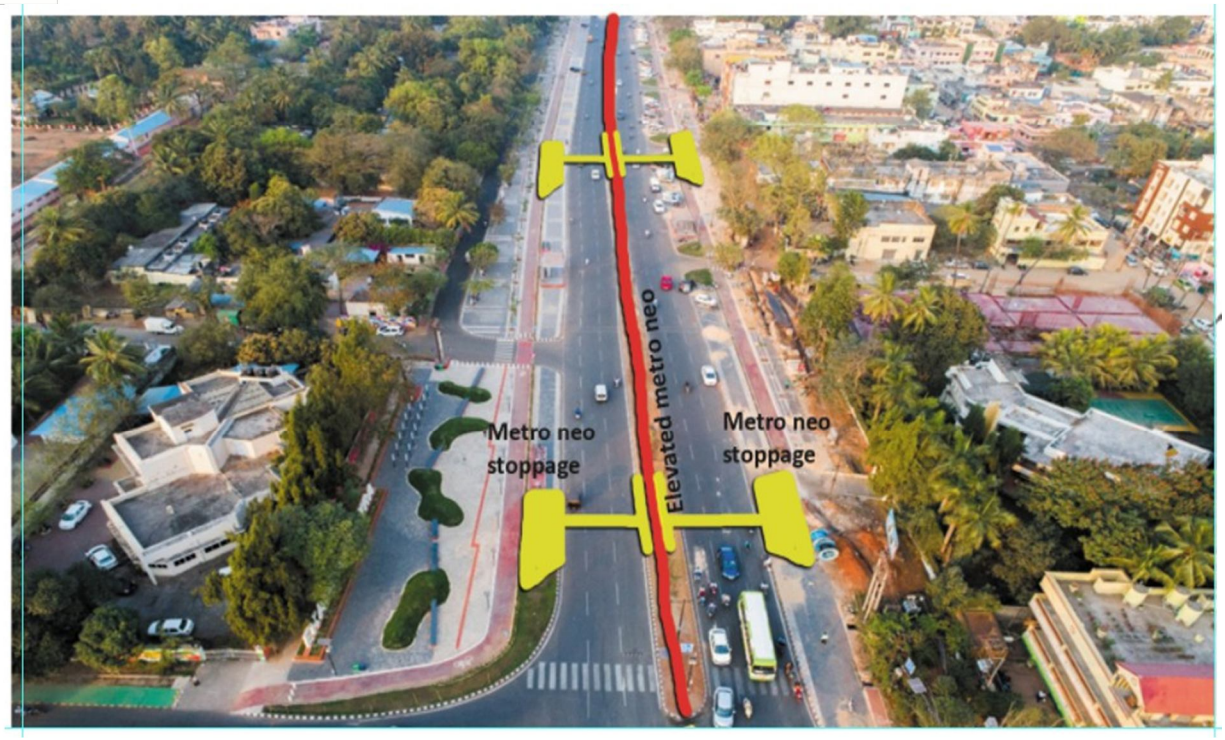

Figure 3 showing Metro-Neo Functionality on Bhubaneswar Roads.

FOOT OVERBRIDGE ON BOTH THE ENDS OF THE ROW CONNECTING THE METRO NEO PATH

Figure 4 showing Circular Ring Patterns on Bhubaneswar Roads.

CREATING THE CIRCULAR RING PATTERN TRANSIT BASED PATTERN FOR THE EASE FLOW OF SERVICES AT ELEVATED PLATFORM ON AREAS LIKE MASTER CANTEEN SQUARE GOVERNOR HOUSE,AG SQUARE, AND MANY MORE WILL INCREASE THE TRANSIT RATE OF FLOW.

VI. CONCLUSION

This study suggests that The articulated/bi-articulated trolleybus system offers a seamless, fast, reliable, and cost-effective travel experience comparable to Metro systems, providing international standards.And it will be the fastest means of transport as compared to the other transit routes services. Bhubaneswar being the tier-2 city with not more than PHPDT of 3000-4000 is more suitable for metro-neo service and this service will cater the traffic congestion and smooth flow of the transit routes.

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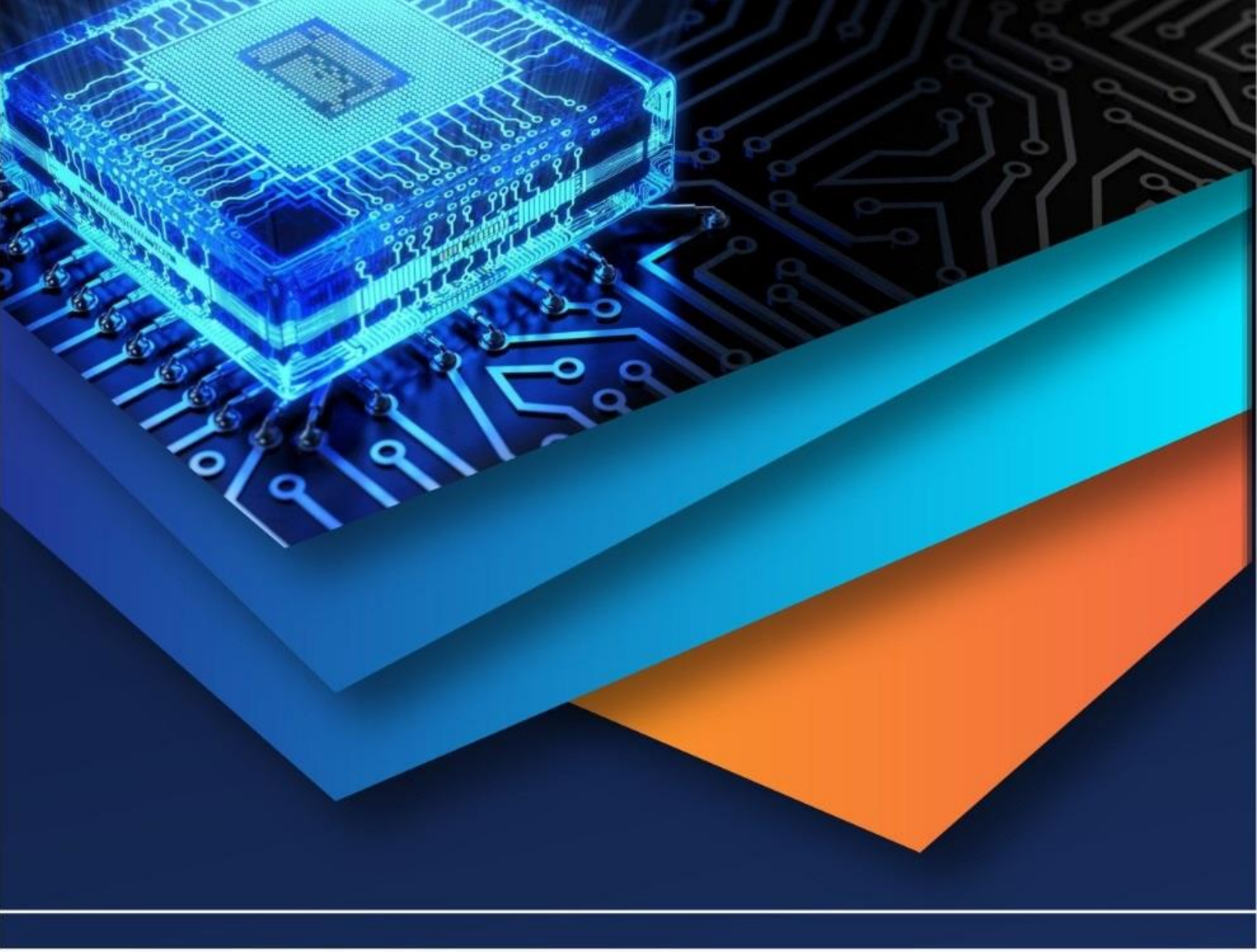

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