

Nagpur Metro Rail Service as a Public Transport System: Purpose and Usefulness

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Abstract: India is one of the fastest growing country in the world with the population of around 134 crore approximately which is second highest after China in the world. As one thing leads to another, more the population more the traffic on the road and more the traffic, more the pollution and mishaps will take place. To prevent these events, Indian Govt. and State Govt. together started various transportation projects. "Metro Rail" is one in every of the foremost superb initiative by Govt. towards resolution traffic issues. In India there are currently more than 26 metro rail projects at various level of planning, construction and operation in various cities in India are going on. Recently, in Nagpur, the Metro Rail started. Metro is expected to provide better, safer and more accessible Nagpur for present and future generations to come. Hence the research aims to know the perception of people about use of Nagpur Metro in terms of transportation behaviours, Attitudes toward various attributes of public transportation, Frequency of transit usage

Keywords: Metro, Pollution, Traffic, Transportation, Nagpur.

I. INTRODUCTION

Nagpur is the third largest city in Maharashtra and also the winter capital of the state. With a population of about 25,000. The Nagpur metropolitan area is the 13th largest urban complex in India. It was also recently ranked as the the cleanest city and the second greenest city in India. In addition to being the site of the annual winter session of the Maharashtra state assembly "VidhanSabha", Nagpur was also a major commercial and political center of the Vidarbha region. It is also known as "Orange City" . In early 2012, the Nagpur Improvement Committee (NIT) requested the DMRC to provide consulting services to prepare a detailed project report for the metro system in Nagpur, Maharashtra, initially 30 km long and then later that was revised to 42 km in July 2012. Thereafter, DMRC conducted Survey, Topographic Survey, Geotechnical Investigation and Environmental Impact Assessment Study. Based on different types of surveys conducted by the DMRC, metro lines have been completed after several checks of the road network, intersections, passenger flow, traffic congestion, connectivity. The alignment proposed by the DMRC is as follows

Route Alignment

Two Corridors have been identified for implementation in phase I of Nagpur Metro Rail Project network as per details given as under:-

1. Corridor I: North-South Corridor : Automative Square to KHAPRI
2. Corridor II: East West Corridor : Prajapati Nagar to Lokmanya Nagar

1.1 North-South Corridor : Automotive Square to Khapri

Entire length (19.658 Km.) of this corridor is proposed as elevated except in 4.6 Km at grade after Airport Station and in MIHAN area near Khapri Railway Station . There are 17 stations on this corridor of which 15 stations are elevated and 2 stations are at Grade. Sitaburdi Station is an Inter-change station.



1.2 East West Corridor: Prajapati Nagar to Lokmanya Nagar

The total length of the corridor is 18.557 kilometre. There are 19 stations on this corridor. All stations are elevated stations and Sitaburdi station is an Interchange Station.

1.3 Benefits of the Transit System

The main benefits of public transit are mobility and freedom. Mass vehicle sustainability has greater potential and key benefits occur through immediate ways to help the environment and conserve energy. In developing countries, such as India, the benefits of public transport should extend to the urban poor with a reasonable fare structure relative to the costs incurred by private transport on fuel, parking lot, traffic jam, etc. A planned and integrated mass transit provision is the only way to reduce congestion and reduce hours of delays across major travel corridors. In addition, the provision of Metro Rail System in Nagpur will be of great significance for sustainable means of transport that meet the mobility and accessibility needs of people.

1. Reduce traffic congestion
2. Pollution control
3. Reduce traffic accidents
4. Increase utility
5. Protection from bad weather
6. Reduce travel time
7. Reduce transportation costs
8. Help save energy

There is therefore a need for a safe, reliable, efficient, affordable, friendly and fast public transport system.

II. LITERATURE REVIEW

Mukti Advani and geetam Tiwari concluded in their paper "Evaluation of Public Transport Systems: A Case Study of Delhi metro . The metro system was planned to reduce congestion on the roads, but the planned system in India shows operating costs and underutilization of capacity. Aniket Raut , They did a study on the "Execution of metro rail project – a case study of Nagpur Metro rail". They said that the efforts of Nagpur Metro Rail Corporation reflect the progress of the project. Other upcoming projects in the country can be planned and implemented on the basis of Nagpur Metropolitan Railway as this project is environmentally friendly. India has a huge need for rapid transit system as a developing economy. Developments like the metro project will stimulate infrastructure development and help the economy grow. K.M. Neware paper on "Impact of Nagpur Metro on Private Transportation Modes in terms of fuel consumption parameter ". In a study by the author, he found that in the current situation, transport planners look for new policies to make the transport system better in cities, the metro rail plays an important role in reducing traffic congestion , vehicle congestion, fuel consumption and emissions. In a survey of preferred mode choice after the introduction of the Metro rail, he found that business people would not move to the metro because of their destination more than one and also more than one trip per day.

December 2017, Mr. Ajit Sao, Md. Gulfam Pathan, Mr. Ajay Mendhe research paper on Nagpur Metro: Review . From the research, it can be concluded that Nagpur can be a model for all cities in terms of public transport system development and road traffic management. Unlike other metro rail projects, Nagpur is completely different and has its own socioeconomic challenges. The population distribution of Nagpur is also an issue that will not be addressed in the metro project.

III. METHODOLOGY

The researcher conducted a customer satisfaction survey on the usefulness of Nagpur Metro Rail to identify specific factors affecting customer satisfaction and evaluate the importance of these factors to customers. The survey includes an online component to ensure full reach. Demographics of respondents are residents of Nagpur city. Online survey delivered through a combination of Google survey form, email, and social media invitation, such as a targeted



Facebook profile . The survey tool is designed to explore how and why respondents make transportation decisions by addressing the following areas:

use and why they use or do not use regular Metro transportation services. Attitudes towards various attributes of public transport, such as safety, reliability, journey times, comfort, accessibility, and knowledge of the system. Demographic information, including age, gender and employment status. Transportation profiles of the respondents were established through a series of questions to understand their traffic behaviour and attitudes towards public transport, as described below. In order to identify attributes that might be specific to rail service, a series of questions specific to metro rail use were raised , Frequency of public transit use (i.e. often, occasionally, infrequently, never). Based on respondents' responses about the frequency of public transport use, they were asked follow-up questions with their previous answers. If respondents said they use public transport by metro three times a week, it can be considered as one of their main means of transport; as a result, they will be questioned about why they choose to use Metro and how Metro can better serve them. Respondents who said they use Metro transit once or twice a week were asked about improvements Metro could make to encourage them to commute more often. Any respondent who indicated that they do not use Metro transit services regularly, had never used Metro transit services, or stopped using these services were asked specific questions to help identify how they chose their current mode of transportation. Below is an overview of survey question design around the frequency of transit usage, which then leads to tailored questions, related to attitudes about various attributes of public transit. For respondents who never rode Metro transit or used it infrequently, questions were designed to identify the respondents modes of travel, frequency at which they use those modes, reasons for not using Metro transit, main reasons for using their current mode of transportation rather than using Metro transit.

IV. ANALYSIS AND RESULTS

1. If you ride Metro Rail 3 or more times a week , What is the main reason you ride a metro train ?

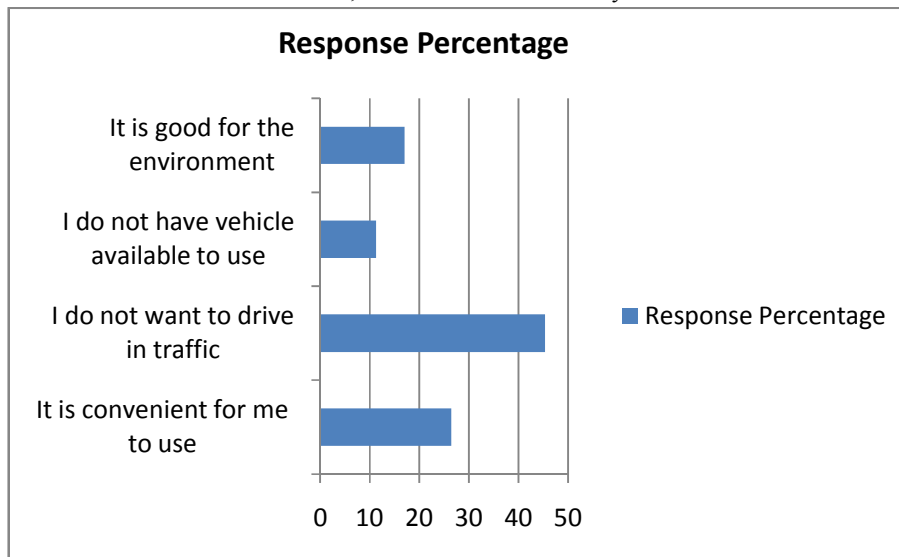


Figure 1. Reason for Riding Metro Rail

More than 45% respondent prefers metro riding as they do not want to drive in traffic. Metro rail provides them an opportunity to avoid driving in traffic . More than 20 % respondent said that metro service is convenient for them to use. Their Transportation decisions driven by convenience, cost, and transit-dependency. More than 15 % respondent said that metro

riding is good for environment as metro service do not create any pollution and metro is eco friendly. Pollution will get lower down if more people use metro service.

Approximately 12 % of them ride primarily because they do not have any vehicle



2. If you ride Metro Rails 1-2 times a week, What is the improvement that would encourage you to ride metro rail more often?

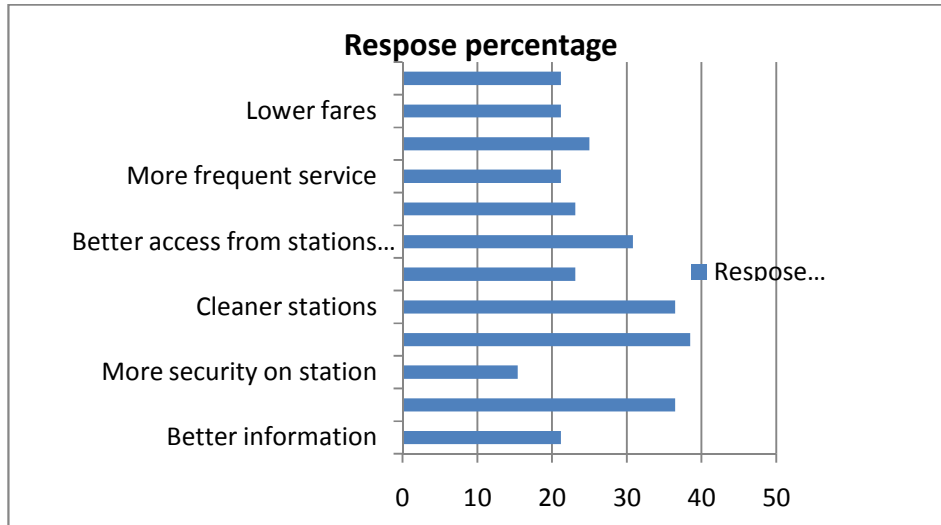


Figure 2. Improvement Parameters

Many people prefers to ride on metro because of cleaner trains , cleaner stations , more security on trains , improved customer amenities as well as more reliable service .

3. If you ride infrequently, have never ridden or previously rode Metro Rails , What is the main reason you use your current mode of transportation instead of Metro rail ?

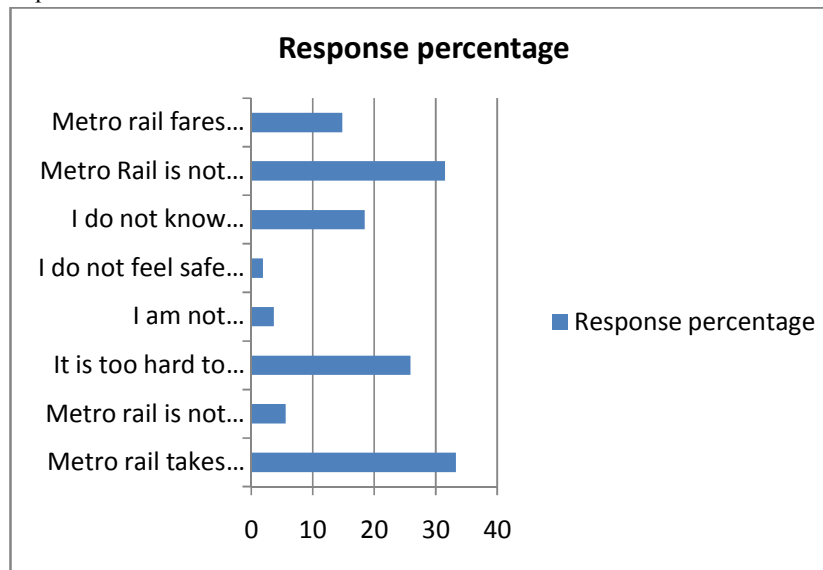


Figure 3. Reason for not Riding Metro Rail

Approximately 30% rail riders stated that access to and from Metro rail are difficult, with many respondents indicating that rail stations are too far away from their home or destination. Access to and from Metro rail stations were main factors that influence their decision to use other modes of transportation rather than Metro rail. It is also found that 33 % people feel that metro rail is not convenient for them to use. 18 % people do not know enough about metro rail service.



4. Gender percentage of Respondents.

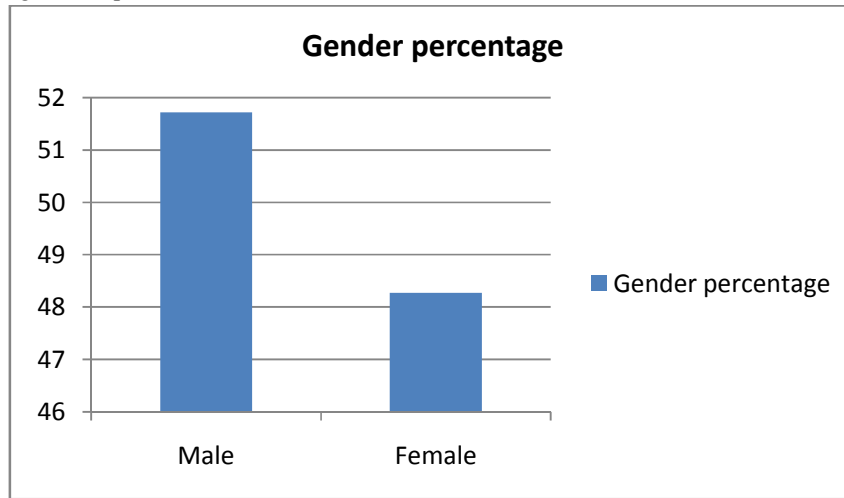


Figure 4 . Respondents Gender

52 % respondent are males and 48 % respondent are female.

5. Age group of respondents.

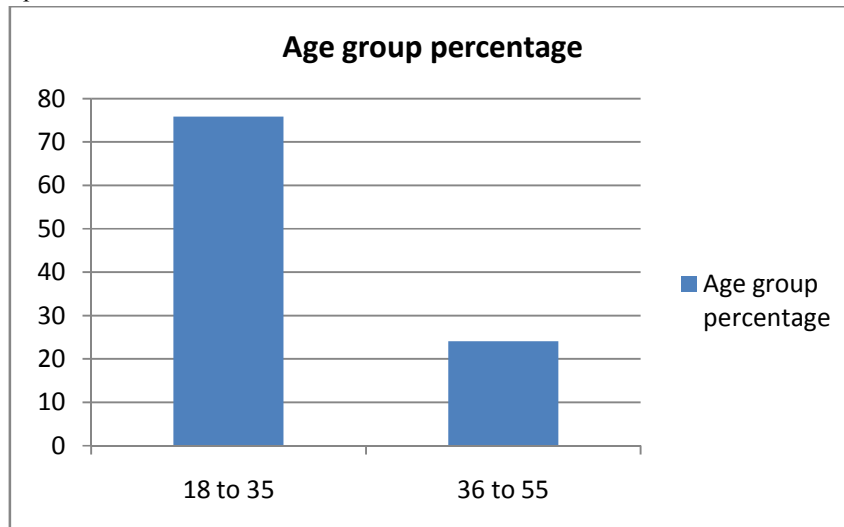


Figure 5. Respondents Age Group

More respondent nearly 75 % are younger in the age group of 18 to 35 and 2% respondents are in the age group of 36 to 55 .



6. Occupation chart

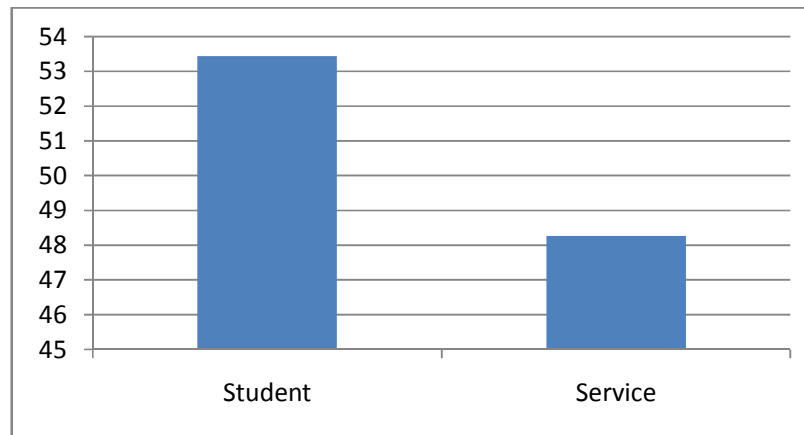


Figure 6. Respondents Occupation

Students contribute to 53% and service people contribute to 47% . Survey has outcome from both point of view of students and service people as they are supposed to travel more. The service category as they are financially strong as compare to students their point of view might be different when it comes to parameter related to fares, comfort, travelling time etc.

V. CONCLUSION

Nagpur Metro for Public Transport Service is one of the strategic decisions of the government to relieve pressure from public transport service providers and consider the demand for the service Public transport is more efficient and reliable for Nagpur city. In the future, the metro service can be extended to cover a larger area of Nagpur city and can be extended to reach neighbouring towns to be able to provide transit service . It is very important that everyone can use the metro rail service. The metro system in Nagpur will be of great significance in terms of sustainable transport to meet the mobility and accessibility needs of the people. From the survey results, it is found that people prefer the metro because they don't want to drive in traffic. People think that the metro is convenient, cheap and environmentally friendly because it does not cause pollution. Many people prefer to take the metro because of cleaner trains, cleaner stations, higher security on board, better amenities for passengers, and more reliable service. Accessing and riding the metro is difficult, many people say the stations are too far from their home or destination. Accessibility to and from metro stations were the main factors influencing their decision to use other modes of transport instead of the metro. Need to raise people's awareness about metro service, because many people do not fully understand about metro service

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