

# A STRATEGIC PLANNING FOR LOCATION OF METRO STATION WITH RESPECT TO MULTIMODAL TRANSPORT SYSTEM

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**Abstract** – Pune is the city with 66.29 lakhs of people and so need of better and easy transportation system. But major problem occurs due to improper utilization of resources and so looking at current scenario regarding traffic problems, pollution caused by the traffic which are likely to affect the various system in future. And so multimodal transport system is studied which may make transit easier that is trying to attract people towards public transport which may reduce many problems.

So Swargate area is taken under consideration which consist of multiple mode of transportation including Metro(under construction) is studied to check whether having multimodal transportation system changes the scenario of public that is whether they are attracted toward public transport and also reduction in traffic, pollution and increase in government revenue.

**Key Words:** Multimodal transport system, Swargate, Metro, Traffic, Pollution, Revenue, Public Transport.

## 1. INTRODUCTION:

Multimodal transportation is the transit under the desired route, but performed with at least two different modes of transportation. This system is mostly used system in various countries to accelerate the speed of the urban transportation system. It is also called as integrated transportation system. So multimodal station is a kind of station or junction where more than one transportation facilities or modes are provided eg BRT, MSRTC and Cabs.

## 2. OBJECTIVES

- To understand concept of multimodal station
- To study how metro is effective due to the introduction of multimodal station.
- To find out the reason behind the selection of particular location of multimodal station.
- To study the revenue point of view of the multimodal station
- To suggest such more stations in Pune city.

## 3. MODES OF TRANSPORTATION AT GLANCE

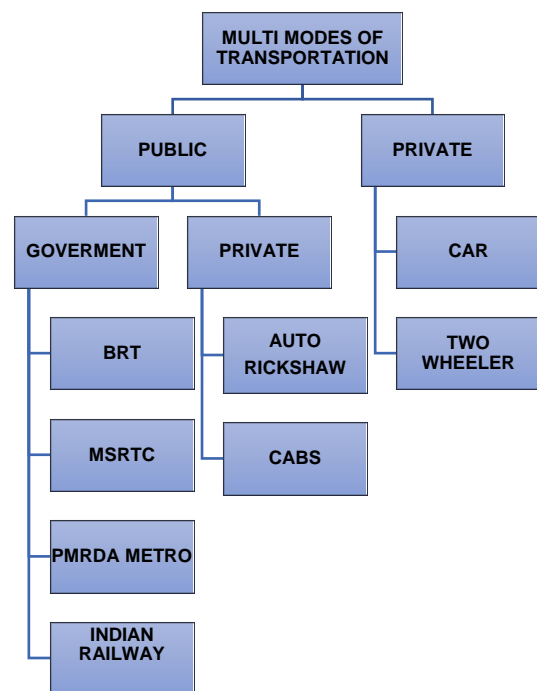


Chart -1: Different Transport system in Pune

### 3.1 Need to use public transport

Pune - Queen of Deccan. In recent years, Pune has grown rapidly. It is a centre for Education, IT hubs and Industrial hubs. Also Pune have the largest number of government establishment and also large Defence area. Tremendously growth in population in recent years and directly affecting in growth of the traffic and so to overcome through this problems government have started various transportation systems like BRT,MSRTC and currently Metro project is in progress and which has more capacity to carry the people at a time.

**Table -1: Different modes of transportation and corresponding passengers in Pune**

Mode of transportation	2021	2031
PT	3307700	3741537
PV	3104541	3500441
CV(PCU)	15395	15548
Total	6427636	7257526

#### 4. ESSENTIALITY OF MULTIMODAL HUB

Only having various types of transportation is not going to solve the problems. People using them will solve the problem and people will use them when it is easily accessible to them. To make it easily accessible and useful selection of Location plays a vital role. By adopting multimodal transport it will reduce transport cost and transit time. It will make easy to plan their journey seamlessly. It will also emphasize them to use public transport. At a multimodal station, public is easily accessible to their respective route.

Now there are some areas in Pune which are highly congested like Swargate, Hadapsar, Shivajinagar, etc. These are the location where max person or pedestrian travel.

#### 4.1 Introduction to multimodal station

An integrated transport system is made up of combination of different transport system like BRT, State Transport, and Metro Rail with interconnected infrastructure and services. Such no single transport system would not get isolated or overburden. Each mode of Transport is having their own inherent advantages i.e. connecting two cities urban to urban, rural to urban.

#### 4.2 Five Pillars of Multimodal Integration

- Integration of public transport authorities i.e. Government and private.
- Effective organizing of Routes.
- Integration of public transit services.
- Integration of public transit fares through a single ticket window.
- Passenger travel information system

#### 4.3 Benefits of Multi Modal Integration

Integrated Public Transport

- Meets the needs of Customers
- Increase in Public Transport Use
- Decrease in Private Vehicle Use

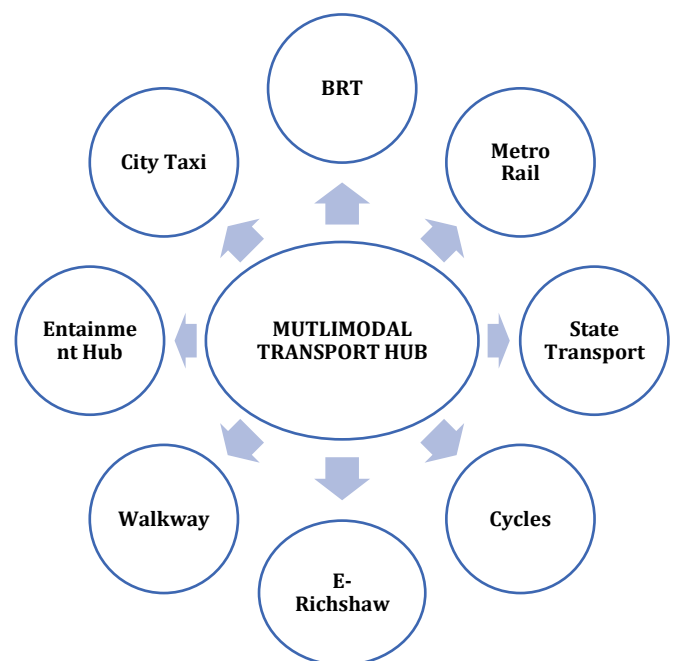
#### 4.4 Benefits for Public

- Reduces travel time
- Reduces hassle of interchange
- Savings in money
- First to last mile connectivity

#### 4.5 Benefits for Operator

- Higher revenue
- Higher operational efficiency
- Higher cost efficiency
- Better revenue generation for Long term.

**Chart -1: Multimedia Transport Hub**



#### 4.6 The Study of vital things related to Multimodal Transport Hub at Swargate, Pune.

Swargate is centrally located in the city, and connected to various congested places like Hadapsar, Fursungi, Dhankawadi, Bibewadi, Shivajinagar etc. It accommodates large no. of auto rickshaws, cabs, PMPML buses, which ply to other areas. So there is a convergence of all transport facilities at Swargate, which necessitates Swargate to create an integrated service (i.e. Multimodal Integrated transport Hub)

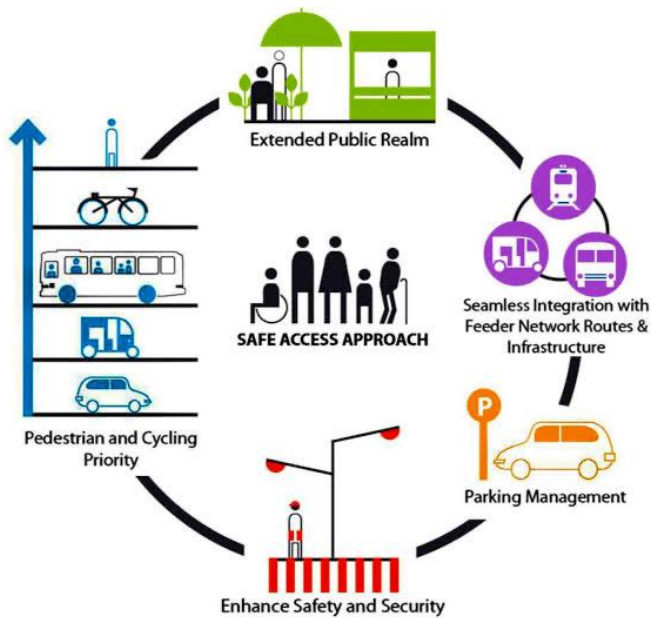


Fig -1: Benefits of Multimodal Transport Hub

- Hub includes retail shops, multiplex, entertainment, and offices on PPP model.
- Building will also include features like solar lights, rainwater harvesting, biodigester and rooftop gardens.
- Envisaged by pass road for decongestion at Jedhe chowk.

Table -2: Swargate daily movement traffic is classified as follows:

Transport ways	Numbers(approx.)
Pedestrians	35000
Two-wheeler	85000
Auto rickshaw	25000
PMPML buses	2050
MSRTC Buses	2047
Cars	18000

From above table, traffic is diverted to many parts of cities through various modes which are feasible to traveler. Thus for comfort and easement of public, public transport plays a vital role. So, Pune metro has proposed the multimodal transport system in the centre of the city.

Some Salient features of Swargate Multimodal Integrated transport Hub are as follows:

- First of its kind in India with integration of metro rail, MSRTC, PMPML bus services, cabs and autos.
- Hub building (105m tall) includes 25 floors over ground and 5 levels underground.
- Built-up area 65lakh sq. ft.

We have seen in table distribution of traffic in different modes without considering metro. It is obvious that metro will lead us to divert the traffic from other modes to metro. Thus Introducing metro will surely reduce the road congestion and travel times, air and noise pollution, energy and oil consumption, all of which will benefit both riders and non-riders of the city. As other private vehicles and public transport excluding electric buses of the city are together responsible for greenhouse gases that contribute to global warming.

### 5. INTRODUCING OF METRO:

Because of its high speed, on time travel, luxury, comfortable ride, women reservation, environment friendly, advance technologies used at stations etc. attract people to use the metro. Increase in users will directly increase the government revenue.

These are some numerical values showing the importance of metro at Swargate multimodal station

Table -3: Percentage with and without Metro.

	2021		2031	
	Without Metro	With Metro	Without Metro	With Metro
PT%	46	48.5	47	49.5
PV%	54	51.5	53	50.5

### 5.1 WHAT MULTI MODE TRANSPORT CAN EFFECT?

From the table it is clearly seen that public is changing its mind and attracted towards public transportation. As the metro will grow in pune, further more corridor are under detail project report phase and some them are going to start in few months.

**Table -4: Percentage difference after coming Metro**

Year	2021	2031
Proportion of Shift	5.4%	5.4%

## 6. REVENUE AS A MAJOR REASON FOR PROPOSAL OF MULTIMODAL STATION

Building a new multimodal transport hub facility is a major, long-term investment of government. So, site selection of such a capital project is considered a crucial action to be made so that will significantly affect their profit and loss of the project in coming years.

Whenever in engineering after the most important thing about the whole world revolving around is money. Metro rail is a mass transit system, there is a lot of money and time is utilized in it. So, this money should be recover by the owner of metro and in case of Pune metro rail, it is a joint venture between GOI and GOM. So Government has different strategies regarding recovering of money as early as possible to be pay the loans and for further developments.

Revenue generation is become a vital component of metro system, 50% come from commuters and 50% from the advertisement.

Now, Swargate is the place that government has planned for a multimodal transport hub because of that location and no. of public is present at that location. Prices at Swargate are very high, developing that site into multimodal hub will benefit for government and public as well. Government will earn from the public transport as well as from the PPP project. Building consists of restaurant, Entertainment hubs, Privates offices and retail shops which will directly benefit the government.

## 7. HOW TO ACHIEVE THIS

Planning and design criteria for station so by considering mainly the location wisely with proper survey work like daily traveler, number of modes of transport accessing the location and distribution of transport. Reduce in the fare of public transport.

## 8. CONCLUSIONS

- Pune city has rapidly developed in last 10 years and expanding faster, as study shows that the

traffic problems in the city are increasing tremendously.

- At Swargate station where multimodal transportation hub first of its kind in India will be used to reduce the current congestion and future demands.
- Various modes of traffic and selection of the location make the transportation easier.
- Transit becomes easy, safe speedy and cheaper, more public will be attracted towards it.
- Increase in public transportation will reduce road traffic and reduction in pollution.
- Due to multimodal transport hub, Government will get revenue from public transport and also from the infrastructure.

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