

SOCIO ECONOMIC IMPACT OF JAIPUR METRO PROJECT-A CASE STUDY

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Abstract: Jaipur, the symphony in pink, is the land of superlatives, where breathtaking beauty and rich & culture blend superbly. The present situation of traffic scenario in Jaipur city is quite alarming with lot of congestion, parking problems, accidents, air and noise pollution etc. The situation is going to be more critical in the coming year and hence a comprehensive and integrated approach to traffic and transport management is the need of the hour. The accidental and environmental problem in Jaipur city is primarily due to high growth of personalized vehicle and private owned public transport vehicles, so in that case metro will be one of the best option of mass transits system which will help in reducing accidental and environmental problems.. The Socio Economic Impact of Jaipur Metro is very important issue for people residing along metro corridors. In the present study an attempt is made to study the socio economic impact of the proposed metro project with respect to transportation issues, business issues, tourism, health and education with the help of Questionnaires and opinion surveys. Jaipur city represent the cities of developing countries in true sense, hence the outcome of the present study can very well be implemented in other similar cities of the developing countries.

Keywords: Metro, Bus Rapid Transit System, Transportation Management, Mass Transit System, Peak Hour Peak direction trips

1.0 INTRODUCTION

Jaipur city is well connected with other important cities of Rajasthan such as Ajmer, Udaipur, Jodhpur, Bikaner, Alwar, Bharatpur, Jaisalmer and other places of historical importance such as Agra, Gwalior, Khajuraho, Delhi, Chandigarh, Kolkata, Ahmadabad, Mumbai & Lucknow through road and rail linkages. The road network consists of National Highways, State Highways and Major & other roads. Jaipur is the headquarters of the North Western Railway Zone of the Indian Railways. Jaipur is a Major Junction station. Jaipur is also connected to Bikaner, Sri Ganganagar, Churu and Sikar through Meter Gauge network. Jaipur has well connected domestic Air links with all metropolitan & other important cities of India. The airport located at Sanganer has recently acquired the status of an international airport and offers direct flight to Muscat, Sharjah, Dubai and Bangkok.

2.0 NEED FOR METRO IN JAIPUR

A comprehensive transportation study for the city is already in progress. The city already has a bus system operated and maintained by Rajasthan Roadways and private operators. This is totally for the need of the city. The Government is also contemplating to introduce Bus Rapid Transit system on certain selected routes. BRT has its own limitations and constraints. For one thing, the capacity of a BRT system can it best be only 10000 to 12000 PHPDT (Peak Hour Peak Direction Trips) and that of a tramway system about 8000 to 10000 PHPDT. The BRT takes away two lanes of the road for dedicated use pushing rest of the road vehicle crowded into the remaining road space. Therefore, unless the road widths are more than three lanes in each direction, BRT is not feasible and even then the non bus rides will be put to tremendous inconvenience. A tramway system shares the right of way with road vehicles and therefore reduces the available road width for other vehicles. Trams need more energy and have limited capacity. Trams have to wait all road crossings for signals and therefore their speeds are low. In the case of a metro system, the road width is not encroached upon. If the metro is elevated, only the central median of the road to a width of 2 to 3 m is occupied for locating the columns carrying the rail deck. If the metro is underground, there is no encroachment at all on the road width. Further a metro will not cause any pollution, less vibration and noise, and safe and reliable. The energy needed for a passenger / km in the case of a metro is only 1/5th of the energy needed for road transport. Therefore, wherever the travel demand is more than 10000 PHPDT, a metro system is unavoidable.

3.0 NEED OF STUDY

Jaipur is Metropolitan city of India, and one of most important city of North India and also Capital of Rajasthan. Jaipur is known for their Heritage value. Tourism is one of most vital industry of Jaipur. So for better development of these fields better development of transportation is required. The traffic & transportation conditions have reached such an alarming stage that it has become necessary to undertake an in depth study, to obtain data on different aspect of traffic related problems and to evolve need based solution, the rapid increase in traffic volume and consequent congestion on the roads, increased accident rates, increased pollution and lack of proper parking spaces indicate that there is an urgent need to develop traffic & transportation management for the pink city. Metro is developed in any city for the long term integrated Development of the city and it will also develop economical, social and cultural growth of that city. Metro route is decided in such a manner that it connects the most important business and industrial points of the city so that easy and fast movement of the people and commodity from their point of production to their point of distribution at as possible as minimum cost. The Socio Economic Impact of Jaipur Metro is very important issue for people residing along metro corridors. Jaipur city represent the cities of developing countries in true sense, hence the outcome of the present study can very well be implemented in other similar cities of the developing countries.

4.0 PRESENT SCENARIO OF JAIPUR CITY

4.1 Population of Jaipur city (Source census data)

The population of Jaipur has increased from 1.01 million in 1981 to 2.32 million in 2001 showing an average annual growth rate of 4.35 percent. With the above growth trend, the projected present population of the city is 3.4 million and is expected to cross 5 million marks by the year 2020. Jaipur, is the only metropolitan city in the state of Rajasthan

Table 1- Projected Population of Jaipur City

Year	Projected Population
1981	1.01 Million
2001	2.32 Million
2009	3.4 Million
2020	8.0 Million

4.2 TRAFFIC CHARACTERISTIC

4.2.1 Mode split

The trip information obtained from the survey has been analyzed with respect to distribution of total trips by mode. The daily trips by various modes are presented in Table 2

Table 2 -Distribution of Trips (All modes)

Mode	No of Trips	Share
Walk	937500	26%
Bicycle	197378	5%
Two Wheeler	956488	28%
Car	293850	8%
Auto Rickshaw	232625	6%
Taxi	292400	8%
Public transport	665263	19%
Total	3605463	100%

4.2.2 Mode choice

Mode of Transport for Home Based Journey is given in the table below

Table 3- Mode of Transport for Home Based Journey.

Sl. No.	Purpose of Journey	Mode of Transport.					
		Public Transport (%)	Car (%)	Two wheeler (%)	Cycles (%)	Others(%)	Total (%)
1.	Work	27.7	3.9	46.0	20.6	1.8	100
2.	Education	52.1	0.6	12.8	25.5	9.0	100
3.	Other	44.0	8.0	35.3	8.3	4.4	100
4.	All Home Based	36.1	3.6	36.0	20.2	4.1	100

4.2.3 Studies carried out

For development of efficient transport system and necessary infrastructure for Jaipur, a number of studies have been carried out by various agencies with varied objectives.

1. Jaipur Master Plan (1971 – 91) proposing land use of over 33 thousand hectares, recommended nearly 18% of land for ‘transport’ use in the form of road network primarily of radial pattern. The post 1991 review by JDA observed that many policies of the JMP have not come true w.r.t. land development, planning districts, self-contained community centre’s, etc., the walled city continuing to have concentrated commercialization and high density pattern.
2. The integrated parking infrastructure project for walled city(2001) recommended development of 5 off-street parking lots for nearly 2000 car equivalent spaces over an area of nearly 33,000 square meters
3. Jaipur Urban Transport Study (NATPAC – 1998) estimated the population size of Jaipur in 2016 as 33.9 lack s, travel demand of 30.1 lack trips and per capital trip rate of 0.89
4. Mass Transit Rail System Study by RITES (1992) estimated a much higher travel demand in 2016, recommended mass transit rail corridors of over 50 km.
5. Jaipur Urban Mass Transport study by CRRI (1996) estimated a PTS share of about 31% of 3.6 – 4.3 m daily trips in 2011, and recommended 5 LRT (59 km) corridors supplemented by an equal number of road based corridors.
6. Jaipur Development Plan (2011 by JDA) projecting a population of 55.40 lacks in 2016 has indicated the direction of growth of Jaipur as North West of Jhotwara, West of Vaishali Nagar, South of Sanganer, and South of Sitapura.
7. City Development Plan for Jaipur (PDCOR – 2005) assessed that economic growth of Jaipur City requires substantial augmentation and improvement of urban infrastructure and environment. It envisages an investment of nearly Rs.2000 crore’s in Mass Transit System and transport infrastructure.
8. The pre-feasibility study for development of an efficient urban transportation system for Jaipur (2006), RUIDP estimating a travel demand of 5.87 lack person trips with P T share of 25 – 42% and recommended development of BRT system.

5.0 SOCIO-ECONOMIC IMPACT OF JAIPUR METRO PROJECT

5.1 Transportation and Business issues

As per the master plan of the BRTS total 138.0 km of route length is identified which will be implemented in two phases. Number of large and medium scale running units: 48 No. of small scale units: 19,544 No. of industrial areas: 19 (Bagru, Bassi, Bais Godam, Bindyaka, Dudu, Hirawala, Jetpura, Jhotwara, Kaladera, Kanakpura, Kartarpura, Malviya Nagar, Phulera, Renwal, Sanganer, Shahpura, Sitapura, Sudarshanpur and Vishwakarma).

5.2 Social Impact

It is expected that after metro is operational in Jaipur, there will be a large scale increase in the growth of real estate and job scenarios will again boom. Some of the companies already present here include MICO, Coca Cola, IBM, Ericsson and NEI popularly known as NBC Bearings. Jaipur also has Reserve bank of India and many other prominent international banks. India's largest integrated IT SEZ Mahindra World City is located in Jaipur. Master planned by Jurong Constructions- Singapore, it covers nearly 3,000 acres (12 km²) of land off Ajmer highway and has already attracted major companies like Infosys, TCS, Wipro, Tech Mahindra, Truworth and Deutsche Bank. India's one of a kind World Trade Park is also under construction in Malaviya Nagar. It will be having luxury hotel, business halls, five screen multiplex, underwater restaurant and many showrooms of international brands. In coming years it will be the hub for modern business development in Jaipur. Jaipur is also planning to have an International Convention Centre and a Golf course. A film city near Agra highway is also in the pipeline.

5.3 Tourism

Rajasthan is one of the leading Tourism States of India. The Glorious Heritage and colorful culture of the state is a special attraction for Foreign Tourists. Heritage assets, found all over the state can be utilized for development of Tourism. During the last few years, there has been tremendous increase in the number of Tourists to the State. However the infrastructural facilities have not kept pace. Presently there are 36,000 rooms available for tourists and by year 2012 an additional 20,000 hotel rooms would be required for tourists in the State. With this objective, the State Govt. had in 2006 announced a new hotel policy proposing several concessions. The concessions in the hotel policy 2006 were to be extended to the Star category of Hotels only, whereas several other categories of hotels, heritage hotels and other tourism units such as camping sites, holiday resorts and restaurants etc. are also providing accommodation for tourists.

5.4 Reduction in traffic congestion and fuel consumption

The traffic on the metro is expected to shift from buses, auto rickshaw, car, taxi and two wheeler. It has been estimated that the number of buses and other private modes are likely to decrease with the introduction of the metro corridors. This will save Rs. 278.5 Crores in the year 2015 towards the vehicle operating cost (VoC). Correspondingly, there will be saving in time of commuters travelling by various modes of road transport. Similarly, metro system itself being faster than conventional road transport modes, will also lead to considerable saving in time of commuters travelling on metro. With the implementation of the project, the annual passenger time savings are estimated at Rs. 352 Crore for the year 2015.

6.0 DATA

Data collections

The data collections were based on questionnaire and opinion survey. Specific questionnaire has been developed for carrying out the survey in the affected areas which is given below

1. Whether it will be helpful in employment generation

Yes [] No [] Can't say []

2. Whether it will affect Tourism

Positive [] Negative [] Can't say []

3. Effect on Handicraft and Export

Increase [] Decrease [] Can't say []

4. Saving in Travel Time

0 min [] 15 min [] 30 min [] 45 min [] 60 min []

5. Will you shift from personal mode to metro

Two wheeler		Car		Cycle	
Yes		Yes		Yes	
No		No		No	
Can't Say		Can't Say		Can't Say	

6. Pedestrian willing to shift to metro

Yes [] No []

7. Will there is saving in travel cost due to metro

Yes [] No []

8. Willing to stay in suburban areas while working in Jaipur

Continue to stay in Suburban Area [] Will opt to shift to Jaipur City. []

9. Will Metro help in improving income level/living standards.

Directly [] Indirectly [] No Change []

10. Do you expect rise in land property.

Yes [] No [] No Effect []

7.0 ANALYSIS OF QUESTIONNAIRE

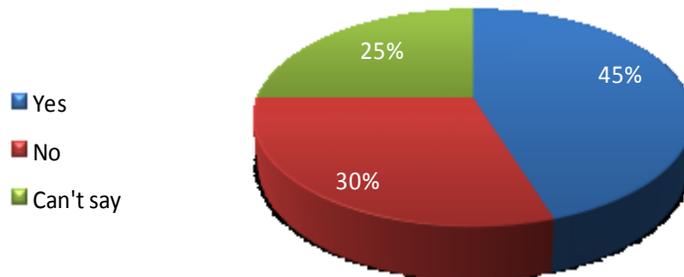
Q.1. Whether it will be helpful in employment generation

Yes-45 %

No-30 %

Can't say- 25 %

Metro route is passing through CBD area of the city and these places are part of the most economic activity zone of the city, so metro will provide most important link to users to connect them with CBD areas. Nearly 45% of people are of the opinion that this metro project will be very helpful in employment generation.



Q.2. Whether it will affect Tourism

Positive-78 %

Negative-2%

Can't say-20%

Metro is covering various tourist places of Jaipur city, so these places will be easily connected with each other. Even all such places are also connected with Railway Station and Bus Stand, so obviously there will be better chance to improve tourism. Nearly 78% people are of the opinion that there will be positive impact of metro on tourism.

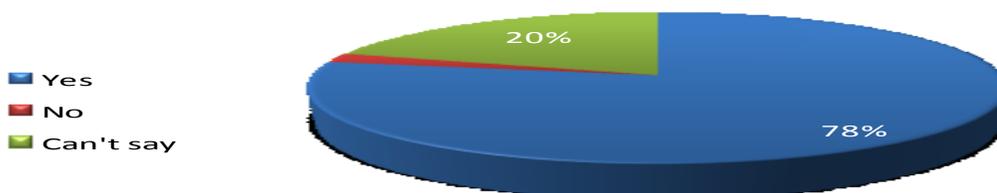


Figure 2

Q.3. Effect on Handicraft and Export

Nearly 50% users are of the opinion that there will be increase in Handicraft and Export due to metro project

Increase-50%
Decrease-10%
Can't say-40%

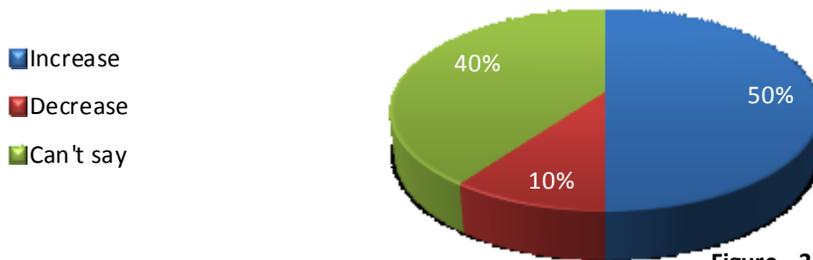


Figure - 3

Qu.4. Saving In Travel Time

Metro route is going through most congested part of the city, other mass transits system like buses are taking more time because of congestion and multiplicity modes in that area. But metro rail will take lesser time and saving in travel time will vary from 15 minutes to 45 minutes for long distance commuters

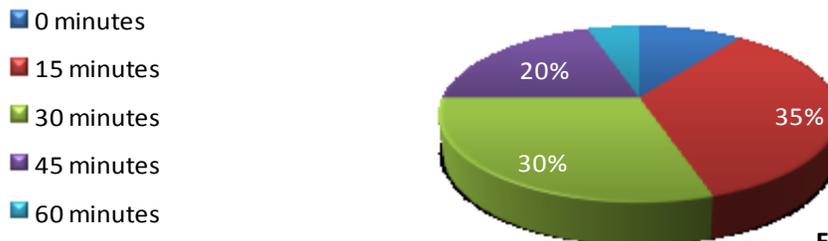


Figure - 4

Q.5. Will You Shift From Personal Mode to Metro

Two wheeler			Car			Cycle		
	Users	Percent		Users	Percent		Users	Percent
Yes	50	50%	Yes	45	45%	Yes	30	60%
No	30	30%	No	45	45%	No	18	36%
Can't Say	20	20%	Can't Say	10	10%	Can't Say	2	4%
Total	100			100			50	

As Jaipur city traffic is increasing day by day and thus generating critical condition of traffic at some places, making safe and quick journey difficult. So, on these spots it is expected that people will shift from their personal mode to Metro. As shown in the table above, nearly 50% people having two wheeler, 45% people having car and 60% people having cycle, have opined that they will shift from their personal vehicles to Metro.

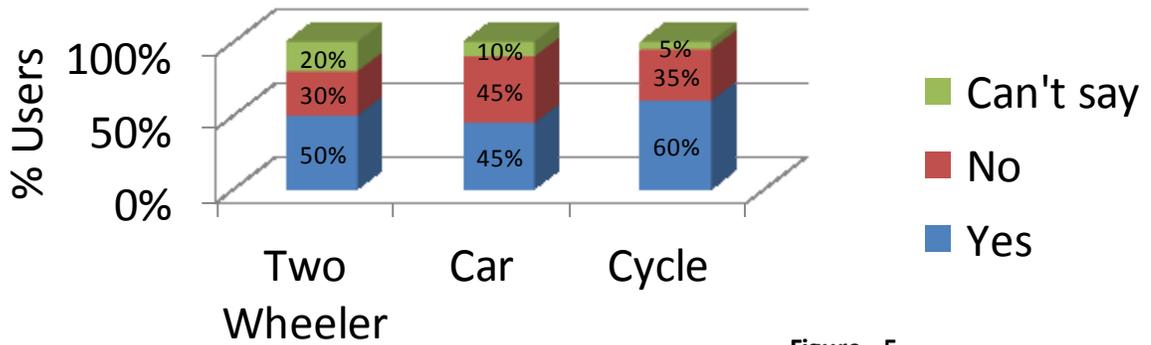


Figure - 5

Q.6 Pedestrian willing to shift to metro

Maximum Pedestrian on these routes are due to some short distance work within the walled city. Nearly 40% users have shown their willingness to shift to metro. People who usually walk down to their work places where the distance is more than 1.0 km may opt to shift to metro.



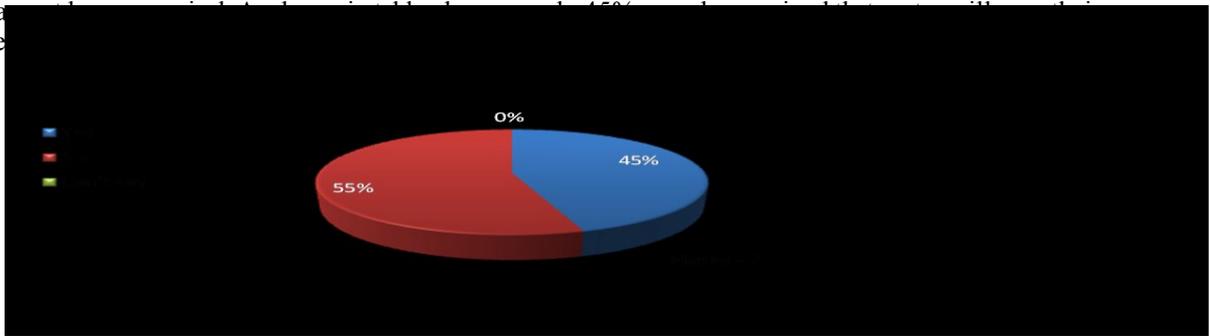
Figure - 6

Qu.7. Will there is saving in Travel cost due to metro

Opinion	Users(% age)
Yes	45%

No	55%
Total	100

There will be significant saving in travel cost for long distance commuters, however short distance journey it may not be significant. 55% of the respondents are of the opinion that they will continue to stay in their suburban areas while working in Jaipur.



Qu.8. Willing to stay in suburban areas while working in Jaipur

Opinion	Users	%age
Continue to stay in suburban Area.	80	80%
Will opt it shift in Jaipur city.	20	20%
Total	100	

As shown in table above, nearly 80% users are of the opinion that they will remain continue to stay in their suburban areas while working in Jaipur. Since faster journey from metro will enable people from suburban areas to reach their work places in comparatively lesser time.



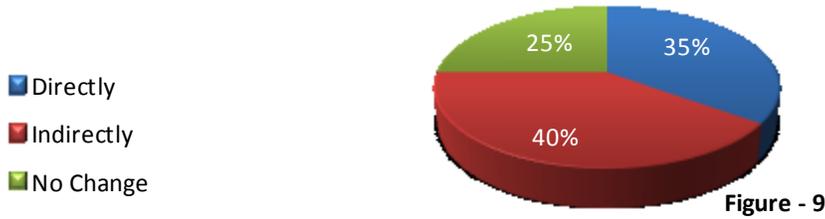
Figure - 8

Qu.9. Will metro help in improving income level/living standards.

Opinion	Users	%age
Directly.	35	35%
Indirectly.	40	40%

No change.	25	25%
Total	100	

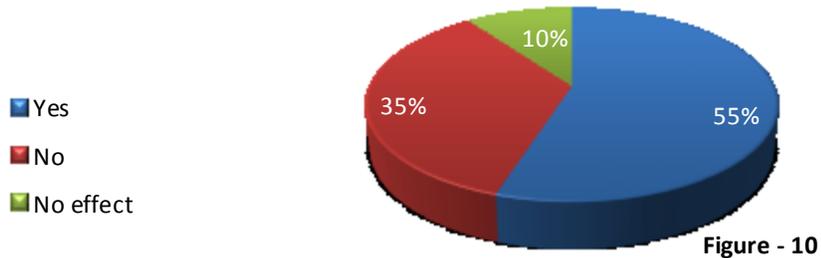
As metro will cover most of commercial & institutional places of city, it will provide benefit to maximum numbers persons. Indirectly there will be slight improvement in their income levels/living standards. As shown in table above, nearly 35% people agree with opinion that metro will improve their income levels/living standard.



Qu.10. Do you expect price rise in land property.

Opinion	Users	%age
Yes	55	55%
No	35	35%
No effect	10	10%
total	100	

Since metro will provide better connectivity to outer areas of Jaipur city, it is expected that land prices may go up along metro routes. As shown in table above, nearly 55% users expected that land property will rise due to metro.



9.0 CONCLUSIONS

The proposed metro will yield tangible and non-tangible savings due to equivalent reduction in road traffic and certain socio-economic benefits. Introduction of metro will result in reduction in number of buses, usage of private vehicles, air pollution and increase the speed of road-based vehicles. This, in turn, will result in significant social benefits due to reduction in fuel consumption, vehicle operating cost and travel time of passengers. Reduction in accidents, pollution and road maintenance costs are the other benefits to

the society in general. The present situation of traffic scenario in Jaipur city is quite alarming with lot of congestion, parking problems, accidents, air and noise pollution etc. the situation is going to be more critical in the coming year and hence a comprehensive and integrated approach to traffic and transport management is the need of the hour. Quantification of some of the social benefits has not been attempted because universally acceptable norms do not exist to facilitate such an exercise. However, it has been considered appropriate to highlight the same, as given below:

- Reduction in accidents and pollution from vehicles
- Reduced road stress
- Better accessibility to facilities in the influence area
- Economic stimulation in the micro region of the infrastructure
- Increased business opportunities
- Overall increased mobility
- Facilitating better planning and up-gradation of influence area.
- Improving the image of the city.

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