

Do We Need To Promote Public Transport For Sustainable Development With Reference To Mass Rapid Transit System (MRTS)?: A Case Of Jaipur Metro Rail Project In Rajasthan

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Abstract

Population of our country is growing at alarming rate. Population of urban areas are growing faster than rural areas given the emerging of economic activities in cities. With the migration of rural population to urban areas for various reasons resulting into increase in lots of issues and problems in urban areas. Although, our governments at Centre level and State levels are putting lots of efforts and trying their best to resolve many of the issues of growing urban areas but somehow it seems that their efforts are falling short to solve those problems. On other hand, with continuous increase in population of urban areas, some of those problems are becoming worsen and leading to emergence of another problems. It is said that if something will not be done on urgent basis to save those urban areas and cities, it will be too late to achieve national goals especially relating to sustainable development. Therefore, to make our cities and urban areas to sustain for long run especially for future generations, it is need of hour to look at those specific issues such as transport, infrastructure, pollution, housing, sanitation, congestion, illiteracy, migration, etc. very carefully and try to resolve as early as possible. But among those mentioned issues, transportation problem (which include congestion, pollution, traffic mix, fuel consumption, high travel time, low productivity, slow traffic movement, etc.) is one of the major problem of cities in today's context and putting financial burden on national economy in many ways.

Over period of time with the increase in population and per capita income especially in urban areas and no systematic efforts from public authorities at various levels to provide comfortable, safe and better transportation facilities in urban areas the number of private vehicles has increased drastically. Again, with the continuous increase in number of vehicles in urban areas in multiplier way and no much improvement in availability of road network i.e. increase in road length in urban areas, it has further added to the problems of cities. Thus, over population of vehicles and less road infrastructure along with limitations of other modes of transport in urban areas it resulted into the increase in problems like congestion,

pollution, accidents, more travel time, increase in cost of operation of vehicles, fuel wastage, and many more.

Therefore, if something can be done by Central and State Government via regulatory and legislative measures to solve the transportation problems of urban areas, then our cities would be more livable. In past and currently also government has taken lots of initiatives to look into those issues and tried to resolve it via various programme and schemes like JnNURM, BRTS, etc. in many cities but still it gives a feeling that lots more to be done with proper execution. Therefore, in this paper an attempt has been made to understand the transportation problem in urban areas especially Jaipur and analyze its impact to decide that whether do we need to promote public transport or not? Also to look into the MRTS (Mass Rapid Transit System) of other cities in order to find out how they are handling their transportation issues and how they are solving it or dealing with it and also to see how far they have got the success in this matter. Also, an attempt is being made to analyze growth of population, vehicles and how public transport in best possible manner (in current context) solve the urban transportation problem of Jaipur City to attain sustainable goal, then only we can make our city livable sustain for future generations.

Key Words: Population, Transportation, Sustainable, Vehicles, Road Network.

Introduction:

Development of transportation system or facilities in any economy is necessary but not sufficient condition for socio-economic growth of any nation. The development of transport and transportation facilities are must along with other factors/parameters to achieve sustained growth. Over period of time, with ever changing demographic scenario of all the nations in general and developing country like India in particular along with changes in macroeconomic variables like per capita income and national income, agricultural and industrial growth, employment scenarios, migration of people for various reasons, and many more with different-different dimensions, the need and kind of transportation facilities also changed.

Further, having look at Indian economy, on one hand there are no adequate transport facilities in rural segment and on other hand in urban areas it is getting overcrowded and congested. Especially in case of metropolitan cities, over period of time given increase in population along with expansion of economic activities, the demand for transportation and transport services also increased for various reasons. Accordingly, our authorities at various levels, looked at the situations, tried their best to provide required transport services/facilities.

However, due to increase in population and changes in land-use pattern, authorities are facing limitations with reference to expansion of existing rail and road network in urban areas.

Also with the increase in number of vehicles, especially private vehicles, on road with different age group in metropolitan cities or urban areas, problem of pollution, safety, congestion, etc. has increased to maximum extend. Therefore, in order to solve the transportation issues in urban areas, it is said that Mass Rapid Transit System (MRTS) would be an appropriate solution. Having look at this, Government of India also taken some good initiatives in this direction especially for the cities or urban areas with high population and high vehicular traffic.

Thus, in order to solve any issue relating to transport and transportation services, and many more, it is need of hour to promote public transport system with demand perspective rather than supply perspective. Moreover, whenever the urban areas or cities will have better and more public transport facilities, the private vehicle users or car users, in order to reduce transportation cost and go away or to avoid traffic jams, congestion, pollution, high travel time, etc., will definitely choose public transportation system (with improved facilities). Moreover, as suggested by literatures also that development of better transport facilities (especially public transport) leads to employment generation directly and indirectly given the backward and forward linkages involves in the process, also beneficial from environmental protection (through less pollution as compare to increase in private vehicles) and affordability (through cost division and common cost) point of view. The development of public transport also results into less fuel consumption (put less financial burden on Ex-chequer in terms of crude import bill), convenient journey through improved facilities as well as from safety point of view it is much needed.

Again, having look at Indian Economy and its emerging cities one can easily observed that for quite some time in past and in time to come, mega/large cities in India will continue to grow in future. It has also been observed that the population of these cities is growing at different rates. Given this and considering the improvement in socio-economic status in these emerging cities, personalized motor vehicles are increasing at alarming rates. Amongst these the share of two wheeler is maximum. This is happening in most of the cities due to inadequacy of mass transit transport services. Further, with the deteriorating level of mass transit transportation services and increasing use of personalized motor vehicles, vehicular population is assuming serious dimension in most of the cities along with not only aggravated congestion and traffic jams, it is also having an adverse repercussions on energy use,

environmental quality and safety. Now, with the rapid increase in population, the pressure with reference to increase in demand for transport infrastructure and services also increased. But given the existing situation it is almost impossible to meet or provide the same with adequate magnitudes and level of services. Again considering that the capacity expansion has not kept pace with increase in transportation demand, all the metropolitan and big cities are today in situation where whole gamut of motorized and non-motorized vehicles scrambles for limited road space under extremely congested conditions (Tiwari Gitam, 2002).

Statement of the Problem:

Having look at population growth and increase in demand for transportation services/facilities due to expansion of economic activities too and at the same time due to inadequacy of existing public transport facilities resulting into massive increase of personalized motor vehicles at alarming rate which is putting more cost on economy in the form of congestion, pollution, high operating cost and time, more fuel consumption along with wastage of fuel, accidents, etc., it is need of an hour to relook at public transport system, especially in urban areas with reference to large cities, to make it more efficient and cost effective to decongest roads solve other issues. Therefore, given this background i.e. nature of public transport in India especially in urban areas and prevailing inadequacies in transport sector which results into issues as we are facing currently, we are undertaking in this study a critical assessment of transport system in urban areas and to see whether do we need to promote public transport or not. For this purpose, Jaipur will be taken as a case study area and Jaipur Metro Rail will be taken as public transport sample with reference to mass rapid transport system.

Objectives of the Study:

1. To examine and understand the existing situation of transportation scenario in urban area especially Jaipur.
2. To broadly identify and analyze issues relating to transportation system in urban area.
3. To evaluate the impact of population growth and income growth on vehicle demand especially personalized motor vehicles in urban areas.
4. To examine the need to promote public transport in cities especially in Jaipur.
5. To suggest recommendations on the basis of the study

Methodology and Data Source:

An in-depth study of transportation system in urban areas in general and Jaipur (Rajasthan) in particular would be undertaken from the point of view of effectiveness and efficiency from economic perspective that whether public transport system is more appropriate or personalized motor vehicle for the city(s). Thus, a thorough appraisal of existing transportation scenario will be done in this study. Further, secondary data from various sources relating to these aspects would be procured and subsequently, data analysis technique will be employed to find out whether we need to promote public transport or not with reference to relative effects independent variable(s) on the dependent variable with given stochastic term, through using or fitting log-log regression model.

Need to Promote Public Transport and Our Analysis:

Heavy pressure of vehicles on capital roads has taken away the speed of vehicles in the state capital. During the peak hours, the vehicles are covering the route of 5 minutes in almost 30 minutes, and it seems normal now a days. Moreover, public are leaving their houses for office or some other destinations almost half an hour or an hour early. This becoming horrible due to red signals and traffic jams at many places in the city. In this situation, on the limited road network of our city, vehicle population gets increased by around 15% or more. Further, in order to find out the average movement of vehicles on city roads during peak and non-peak hours, JDA conducted one a survey and came across very shocking results. JDA found that the situation of main road i.e. Tonk Road, JLN Marg, MI Road and Station Road is worse. These roads have huge rush/traffic along with the minimum speed of the Vehicles. Thus, according to JDA we may find more elevated roads in the city in near future to bring some improvement in road condition i.e. traffic and congestion, the kind of solution to decongest the city roads.¹

However, having look at some of our recent experiences as an example like now a days the elevated roads of Noida are subject matter of discussion among public and domain experts. Before this, elevated roads of Delhi and country's expressways being presented as a possible solution to the traffic problems in our country to a good extent. This is because the traffic issues has gone up to that level even in small towns that a small hope of solving this issue generates or enhance the expectation level of a people to maximum extent to come out of traffic and congestion problems. Again, over bridges and elevated roads are considered as one of the big solutions to tackle traffic problems or issues. But it is very surprisingly that the cities with the best traffic management system in the world have not solved their congestion

¹ Rajasthan Patrika dated 13th August, 2018, Pp 2.

problem through overbridges or widening of roads, but by making their public transportation system more effective and efficient, they have rid-out of traffic problems.²

Further, JDA survey also revealed that on a daily basis almost 400 vehicles are getting registered with the traffic department. Currently, more than 26.5 lakhs of vehicles are moving on city's road network. The load factor is almost 1.3 times on existing road network. They found the highest speed i.e. 48 kms/hour on central spine road only. The survey also revealed that given this congestion it is really very challenging task to visit "PARKOTA", especially during festive season, going for shopping in PARKOTA area is very challenging. The speed of vehicle in same area is about 12-16 kms/hour during off-season whereas, during festive and other seasons the speed gets reduce to almost half or less. Given below the Table with speed of vehicles on Jaipur City Roads during whole day and peak hours³:

TABLE: Speed of Vehicle on Jaipur City Road		
ROUTE	PEAK HOURS (Speed km/hr)	WHOLE DAY (Speed km/hr)
Bhawani Singh Road	4.48	16.93
Imli Fatak Road	4.59	13.33
Madhosingh Road	8.46	12.86
Route With High Speed		
Central Spine Road	48.51	59.48
Janpath	45.96	48.93
Queens Road	40.00	45.82
Busy Routes		
M I Road	7.58	16.81
Tonk Road	9.54	15.00
JLN Marg	12.14	27.18
<i>Source: Rajasthan Patrika, 13/8/2018.</i>		

This results into huge cost to city, state and nation with reference to loss of operating time, more vehicle operating costs, fuel wastage, pollution, loss of manpower hours, etc.

² Rajasthan Patrika dated 28th June, 2017, Pp 3.

³ Rajasthan Patrika dated 13th August, 2018, Pp 2.

Again, it is estimated that traffic and congestion on road is putting burden (as a cost) on our economy annually of about Rs. 60,000 crore i.e. almost Rs. 164 crore on daily basis. Out of this, cost equivalent to Rs. 47,000 crore is only due to delay in transportation of goods. Around 57% of the people are of the opinion that congestion and traffic via pollution and other ways effect their health and this also results into decline in their performance efficiency by 40%. As we are aware about the fact that entire world is affected by traffic problem, it cost around Rs. 4,60,000 crore to United States and in Europe the figure is around Rs. 10,00,000 crore. Thus, it is estimated that the traffic problem cost to entire world about Rs. 1,90,00,000 crore and on an average a driver spent around 45 Hours in traffic jams every year.⁴

Further, with reference to comparison between Asian and European countries, the Asian countries like India and China has given preference to widening of roads and making elevated roads to resolve the problem of traffic on roads, whereas in case of European countries, in order to solve the traffic problem they brought control on vehicle demand along with modern roads. Countries like Singapore and Hong Kong in Asia developed public transportation system or public vehicle system to make traffic system more easy and convenience. On other hand, on line with India and China many of the Asian and African countries have constructed over bridges and elevated roads, but they still failed to solve their traffic problem. Moreover, it has been observed and also found in recent studies that amongst various causes of traffic jams are bottleneck (40%) i.e. less width of road, accident (25%) i.e. accident on roads, weather (15%) i.e. water lodging, landslides, bad weather, etc., construction works (10%) i.e. public and private construction works, signals and others (10%) i.e. traffic signals, special programs, etc.⁵

Again, many of the experts are of the opinion that we should increase the width of roads from 4 lane to 6 lane and 6 lane to 8 or 10 lanes. But we are of the opinion that increasing the lanes beyond some specific limit is not actual solution given the growth of private vehicles as well as urban population. Even, many countries of the world experimented (as discussed earlier) the solution to the urban congestion in the form of expanding the lanes i.e. widening of roads, but it didn't work, it was just a temporary solution for short run. With increase in vehicle population it become worsened. Now all those countries are planning and working on the possible solution in the form of reducing the number of vehicles. This move simply reflects that there is a need to promote public transport in order to reduce private vehicles on road, because we cannot deny anyone to move.

⁴ Rajasthan Patrika dated 28th June, 2017, Pp 3.

⁵ Rajasthan Patrika dated 28th June, 2017, Pp 3.

However, having look at traffic problem of Jaipur City, the story says something else with reference to the causes of traffic jams along with all other reasons discussed earlier. We are of the opinion that in order to have good public transport, we need to have better infrastructure too in our city. However, the situation some different story. It has been observed that the city roads are not getting freed from potholes as well as unwanted cattle. JDA (Jaipur Development Authority) and Jaipur Municipal Corporation are spending every year almost Rs. 500 crore on roads, also spending big amount too for capturing unwanted cattle from the roads but no improvement or result seen so far by public of Jaipur. Despite of Court's order roads are not getting free from potholes and cattle. Very recently Court has taken very strict stand and said that if in next few weeks a system has not been developed to resolve the said problems, the responsible officers will be sent to jail. But the bad condition roads are still there. Although, road construction and repairing works keep on throughout the year but the potholes problems on the roads are not getting off. Further, if we compare certain roads of Jaipur city the situation revealed that the roads like JLN Marg, Sahakar Marg, Queens Road, large part of Tonk Road, M I Road are far better than roads like Hasanpura, Shipra Path, BRTS Corridor, Pratapnagar, Sanganer, etc. with reference to potholes i.e. bad roads or moving of unwanted cattle on roads.⁶

Moreover, traffic congestion/jams have adverse effects on health, as also found by many research in past. If a person held in traffic the possibility of getting heart problem increases due to smoke and emission, noise of vehicles, stress, etc. Therefore, there is an immediate need to promote public transport in urban areas of our country in general and Jaipur in particular through better facilities, good and more number of public vehicles and so on. Even some of the nations also followed few solutions and experimented to rid out of traffic problem through better management of public vehicles, control on vehicles, better traffic sense, freedom from trace pacing and many more.

Now with reference to the better management of public vehicles, it has been found that countries with better traffic management system have better public vehicle flow or movement or connectivity. For example Hong Kong has connected 11 lines of public railway to buses, mini-buses, tram, ferry, taxi, etc. with each other to make public transport more effective and efficient. On the other hand if we look towards Jaipur city with reference to its public transport system, especially Jaipur Metro Rail System which has been recently introduced for better connectivity and to strengthen the public transport system in order to avoid the

⁶ Rajasthan Patrika dated 13th August, 2018, Pp 2.

consequences of more private vehicles on the city's road such as congestion, pollution, better operating time, etc., given some policy lags still not able to attract more of the passengers due to no connectivity in effective and efficient manner with buses, mini-buses, taxi, autorikshaw, etc., and also given the existing route of Jaipur Metro it is far away from places of resident in many cases. Hence, the result is that still metro has not speed-up and currently only around 17000 people travelling daily which is much lower than its estimation or projection as per its project report.

In other words, urban population of Jaipur is not using Jaipur Metro. Despite of the huge population i.e. almost 40 lakhs in Jaipur, only 17000 people are using metro services. This is happening when there is huge flow of thousands of students and other people for various reasons on daily basis. This simply reflects that despite as an important public transport mode it is not attracting city people nor visitors. Year after year metro is experiencing decline in passengers. However, the first year of metro service into operation i.e. 2015 was quite good (on an average 27000 people used metro on daily basis). Now this has come down to 17000 or little more only. Although, with reference to certain initiatives, metro has increased number of trips and also reduce waiting time for metro to every 10 minutes, still unable to attract more passengers. Moreover, the concerned authorities have further hope that once the LINE B of PHASE –I will be in operation in “PARKOTA”, the number of users may increase, because it will connect areas like Mansarovar and Sodala to “PARKOTA” directly where people can use metro services more conveniently given below in the Table with reference to the change in trend is metro rail service usage in Jaipur.⁷

Table: Number of Passengers Travelled Through Jaipur Metro Rail			
Passenger's Statistics	2015-16	2016-17	2017-18
Per Month	824589	601836	513772
Per Day	27222	19777	16690
Per Hour	1847	1288	1098
Per Train	206	147	126
<i>Data Source: Jaipur Metro Rail Site (as on 24-06-2018).</i>			
Some Facts:			
1. More than 51000 passengers travelled on 1 st Day.			
2. More than 14, 00,000 passengers travelled in 1 st Month.			
3. More than 70,000 people having Metro Card.			

It has been observed from the given Table that the passenger's interest in using metro rail services has decline over period of time. This has happened due to some reasons and the one possible reason is that there are no direct connectivity from metro stations/routes to the other

⁷ Rajasthan Patrika dated 24th June, 2018, Pp 3.

part of the city. Although, in the beginning some efforts being putted to bring some busses nearby metro routes but given no proper mechanism being followed the availability of feeder services felt short of actual need. This resulted into dis-attachment of city people from metro. Again it has been found that the existing route of metro and its stations are away from colonies i.e. residential areas, this force the passengers either to take personal vehicle or private buses (since no bus services available in effective manner from public authorities) for their destinations rather than metro service. Further, there are no industrial areas on the existing routes of metro and hence it may be the possible reason for low capacity utilization with reference to travel demand or service demand.

Again, in order to decongest city or urban areas from growing private vehicles, the best way is to control the private vehicles and this can be done through strict laws, rules and regulations, etc. as followed by many of the developed countries. For example, countries like Germany, Korea, etc. supplies cars to the world but they have controlled it in their own countries. Likewise, Japan has implemented strict laws on buying of private vehicles to tackle the issues of congestion. This simply indicates that rather than following supply side economics at some point of time one has to follow the demand side economics i.e. restricting the demand of vehicles (Although, this mechanism has some consequences to one's economy in one or the other way but these consequences are very small against the cost being bared by nation due to congestion, traffic jams and so on). However, in India or in its urban areas there are no such mechanism or laws. We follow supply side economics rather than demand side economics. i.e. as supply of vehicles or vehicle population increases, we try to increase the width of roads in the form of supply of more infrastructure to accommodate increased vehicles without any framed policy for parking, accommodation of vehicles on city roads especially, etc. we do not try to restrict the demand for vehicles especially private vehicles by implementing strict laws as followed by some of the countries of the world. But, the current study is of the opinion that given the nature of our economy with reference to many socio-economic parameters and also due to the developing nature of our economy it would be too early to say about following strict rules with reference to the demand side economics to control the private vehicles population to decongest the urban roads. However, another possible way to control private vehicle population in urban areas to decongest city roads through following demand side economics even without much of socio-economic consequences is to promote the public transportation in effective and efficient manner and allow them to compete with private vehicles, by providing them required and necessary support in best possible manner. This could be done through MRTS i.e. Metro Rail System

and thus, to decongest Jaipur's overcrowded roads, Jaipur Rail Metro is one of the best solution with some positive corrections in the existing scenario.

Along with this another possible solutions to decongest urban roads and reduce the consequences of congestion is traffic sense and make road free from trace pacing. With reference to traffic sense, through traffic awareness campaign we can reduce the traffic. Even in our country we conduct "Sadak Suraksha Saptah" i.e. kind if Road Safety Week, but the reality is that hardly people follows it. Thus. Given less traffic sense the traffic jams happened in following ways:

1. Butterfly Effect: due to change in lane by one vehicle or driver, have effect on entire traffic and the speed of other vehicle reduces in the traffic.
2. Unknown Waves: When the traffic of two roads meet at one point, traffic jams happened.
3. High and Uncontrolled Speed.

Traffic jams also happened due to trace pacing in urban areas. This results into less availability of road for movement as compare to actual road size. Although, countries like Munich, Zurich, Singapore, etc. has got freedom from this problem but country like ours are still struggling with this problem. This is again happening due to the socio-economic situation of our country along with the negligence of concerned local authorities with reference to fulfilling's duties. One can find many examples relating to this problem in major cities like Mumbai, Delhi, etc. and in Jaipur one can find this issue in areas like Vaishali Nagar, Chitrakoot, Near Railway Station and Sindhi Camp Bus Terminal, PARKOTA, Bankrotha, and many more.

Further, on the basis of available data to evaluate the relation of growth in vehicle population in Jaipur with growth in population of Jaipur and growth in NSDP, we selected three major variables i.e. vehicle population in Jaipur (as dependent variable), population of Jaipur and NSDP (as independent variable).

The Model is:

$$Y_i = \beta_1 + \beta_2 X_i + \beta_3 X_2 + U_i$$

Whereas;

Y_i = Vehicle Population in Jaipur

β_1 ----- β_3 = parameters to be estimated

X_i = Population Growth in Jaipur

X2 = NSDP (National state Domestic Produ

Thus, on the basis of applying the data in given model for estimation, the result is given below:

	Vehicle Population	
	Population (Jaipur)	NSDP (Rajasthan)
Elasticity	2.23	0.44
R²	0.93	0.95
t-stat	8.33	10.39
<i>Source: Our Estimates</i>		

Now, in case of vehicle population and population growth in Jaipur, to analyze the impact of population on vehicle growth the hypothesis constructed i.e. there is no significant relation between vehicle population and population growth. However, the result shows that there is significant relation. Therefore, the hypothesis is rejected. Moreover, the R² value is 0.93 indicates that population growth explains 93% of the variability of vehicle population. It justify strong relation between these two variables. Further, in case of vehicle population in Jaipur and NSDP (Net State Domestic product), to analyze the impact of NSDP on vehicle growth the hypothesis constructed i.e. there is no significant relation between vehicle population in Jaipur and NSDP. However, the result shows that there is significant relation. Therefore, the hypothesis is rejected. Moreover, the R² value is 0.95 indicates that NSDP explains 95% of the variability of vehicle population in Jaipur. It justify strong relation between these two variables.

Conclusion:

The study conclude that promotion of public transportation system is need of hour in India in general and in Jaipur in particular. This is because the population is growing at its own pace and along with it the movement of people from rural area to urban area as well as city's own population has also increased on one side and given the emergence of economic activities in urban areas it will continue in same passion. As a result of this the demand for transportation also increases for urban population due to various reasons i.e. economic and non-economic. Given an increased in demand for transportation in urban areas and no adequate and effective availability of transportation facilities by concerned authorities, the population of private vehicle has increased beyond expectations, as also observed in our analysis. Now, the

continuous increasing personal vehicle population resulting into congestion, traffic jams, pollution, high travel time, more fuel consumption, high cost of movement along with limited available road network.

Thus, with the promotion of public transport system it can be possible to divert good amount of movement from personalized vehicle to public transport. Again with the promotion of public transport system we can decongest city roads, save fuel and operating time, reduce operating costs and pollution level. This results into positive impact on health of people, ease of movement turns into consumer surplus which further reflects through investment in education, health, food, improve in standard of living in long run. More and better public transport facilities makes people to shift out of the city for housing and other activities results into higher level of consumer surplus with reference to low cost of living.

However, this cannot happen overnight. To do so firstly, our government should follow demand side approach without effecting interest of commuters, as discussed in the paper. Secondly, in case of Jaipur, to strengthen the public transport system via MRTS i.e. Jaipur Rail Metro, its connectivity with feeder services i.e. low-floor buses, autos, cabs and other private buses must be improved. Although, it is being done in past but much more is required in this front. To do so, our study suggests that Government should introduce more number of low-floor buses in Jaipur from existing number of just about 400-500 or so to atleast 3000 buses but that is to of good quality and better facilities to attract more people towards usage of Jaipur Rail Metro services. And for this, people must be provided with sufficient number of feeder services so it would be convenient for them although they reside at far places from Jaipur Metro but ease of movement motivates them, after all travelling through public transport and especially through Metro Rail, it is cost effective. We understand that this process involved huge cost, but this can be done with strategic approach for better utilization of Jaipur Metro Rail and other public transportation facilities available in the city to solve the problems discussed in the study. Thirdly, on line with Delhi Metro Card, Jaipur Metro Rail card can also be connected with other modes of public transport (for example RSRTC, other Rail services, etc.) for payment purpose in effective and efficient manner. This card can also be made available or applicable to be used at Toll Plaza, Fun and Entertainment Zone, and other utility services too, may be just like Paytm, Jio Money, Airtel Money, BHIM UPI and many more. Further, on line with app like M-Indicator in Mumbai to provide various information through one platform or single window, Jaipur Metro or may be concerned authorities develop similar app platform. Hence, in this regard, detail study is called for.

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