
A STUDY ON THE KOCHI METRO RAIL – ITS IMPACT AND EFFECTIVENESS ON THE PUBLIC

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Abstract

We are living in fast developing society. Every day brings new technologies and development in our locality. Not only in our place but also around the world. The communication systems and transportation mechanisms connect people around the world so easily with utility of less time, cost and comfort. These kinds of developments also increase the standard of living of people. The new transit system reduces traffic congestions and pollution too. Here this study focusing on the new transportation system that has been commercially started its construction for a traffic free area during last two years, "The Kochi Metro".

Kochi Metro Project is one of the biggest urban Project undertaken in Kerala state. The Project was implemented through densely populated area along highly congested routes. The Project had to go through fast, a visible positive support to the Project from the Government, City Corporation and GCDA should be available. It has a wider scope in the near future. It will definitely increase the standard of living after the successful implementation of metro city. Through this paper it is seen as to - How it has created an impact on the Public? What would be the highlights of the project? These questions would help us to conclude as to how the residents and the businessmen of Ernakulam would be benefited.

Keywords: Kochi Metro, Traffic Congestion, Rapid Urbanization , Impact, etc.,

INTRODUCTION

Kochi with its wealth of historical associations and its unique setting reflects the eclecticism of Kerala. It is one of India's important ports and a major Naval base. It is a centre of higher education as well. Cochin Shipyard, which is the biggest Ship building yard in India, is situated here. Kochi consists of mainland Ernakulam which is connected to the islands of Willington, Bolghatty and minor islands within the vicinity. Fort-Kochi/Mattancherry on the southern peninsula; and Vypeen Island situated at the North of Fort Cochin.

Rapid urbanization and intense commercial developments in the recent past have resulted in steep rise in travel demand, putting Kochi's transport infrastructure to stress. With mega projects such as 'SMART CITY', 'INFO PARK', 'FASHION CITY' and "Vallarpadam Container Terminal", etc. on the anvil, travel demand is expected to shoot up, strengthening the need for augmenting the transport infrastructure in Kochi region. This growing demand has led to the decision of a Metro rail connecting the important cities and thereby bringing about an idea in the enhancement in transportation.

The research work covers the opportunities and challenges of a metro city with special reference to KOMET (Kochi metro). Here the study focuses on the impact of the people living within the area as well as how the rail system has created an Impact on the commercial hub- Ernakulam City as well as to the public of Cochin City.

Stretch of Kochi Metro rail project

Kochi Metro is an under-construction metro system for the city of Kochi in Kerala, India. The first phase is being set up at an estimated cost of Rs/-5181 core (US\$820 million) and is expected to be completed by 7 June 2016. As of today it is seen that Kochi metro had been inaugurated on the 17th June 2017 by our Honorable Prime Minister. Mr. Narendra Modi. Since then the full pledged Metro has been a link between the stations of Aluva and Edappally. The work of the Metro had been divided into two phases the Aluva-Pallarivattom stretch which was the one inaugurated lately. The second phase is the stretch from Pallarivattom - Petta which is still under construction. Kochi Metro is a proposed rapid transit system for the city of Kochi in Kerala, India. The 25.65km metro line will run from Aluva to Petta and will include 22 stations. The Kochi Metro Rail Project is also known as Komet or K-3C. The heavy traffic congestion in the

locality has initiated the development of a metro rail system in Kochi. This is the first Metro project in the country which interlinks the rail, road and water transport service.

Buses are currently the major public transportation system in Kochi. The new metro system is expected to reduce traffic congestion, while providing safe and rapid transportation to commuters. It will also reduce pollution and noise levels, as well as congestion on city roads. The project will create employment opportunities for the local people. It also focuses on increasing the economic vitality of the region by improving infrastructure resulting in the further development of the greater Kochi area as an economic, transportation, and tourism hub.

STATEMENT OF THE PROBLEM

The study is conducting on the topic “ A Study on Kochi Metro Mail – Its Impact and effectiveness on the Public” . It is so conducted to evaluate the use of metro system in a city like Cochin. This also gives emphasis on the opportunities in the area of employment generation, tourist attraction and overall growth of the city. Metro is expected to increase the standard of living of people in the locality.

OBJECTIVES

- To study the satisfaction level of the people using KMRL.
- To evaluate the variables that increases the Economic growth of Cochin City.
- To analyze the job opportunities with the commencing of Kochi Metro Rail.

SIGNIFICANCE OF THE STUDY

In the development of a locality, Change is an important factor and with the growing demands the need to be technologically upgraded is the need of the hour. It is significant in terms of increasing the living standards of the people. With this in mind the government with both public and private participation brought about the project Kochi Metro. Metro is thus a developmental proposal for growth of the city. This study focusing on finding the impact and

effectiveness on the Public and how the residents would benefit in a highly populated area like Cochin.

METHODOLOGY

Source of data

Both primary and secondary data from different sources are collected to support this research work. Primary data is collecting from general public by the preparation of interview schedule. Secondary data is collecting from news paper magazine and concerned developmental agencies in Cochin.

Sample size

A sample size of 40 was taken from public in Cochin City and 20 of them belonged to the business class and the rest the general public. The samples were selected on the basis of Convenience sampling.

Tools for research

Simple graphs, charts, are used to show the results of analysis. Percentages and tables also contribute toward the work.

LIMITATIONS OF THE STUDY

Every work might have its own pros and cons and the limitations felt for this study was:

- Time was a constraint to conduct an in depth study.
- Focused on the people residing within the limits of Ernakulam District.
- Sample size was small and some respondents could have given biased information

Impact due to project location

1. Change of land use pattern: The alignment is so selected that the change of land use pattern is minimum. The change of land use is expected to be about 16 hectares.

2. Loss of trees: About 477 trees exist along the alignment and are likely to be lost. Total cost of these trees lost is about Rs 3.5 lakhs. There will be no encroachment into natural reserves as the project area is in the urban centre.

3. Loss of historical and cultural monuments: No historical or cultural monuments was affected as a result of the proposed project.

4. Soil erosion and health risk at construction site: Runoff from unprotected excavated areas can result in excessive soil erosion especially when erodibility of soil is high. Mitigation measures include careful planning, timing of cut-and-fill operations and re-vegetation. Problems could arise from dumping of construction spoils, waste materials (from contractor's camp), etc. causing surface and groundwater pollution. Hence, it is proposed to have mix concrete directly from batching plant for use at site. Batching plants should be located away from the densely populated areas. Health risks during construction activity include hazards to workers due to lack of sanitary facilities like safe disposal of garbage and clearance and disposal facility. In order to avoid such a situation, proper mitigation measures should be incorporated, which should include proper water supply, sanitation, drainage, healthcare and human waste disposal facilities in labour camps. In addition reduced contaminated water spillage and adoption of disease control measures should be adopted to reduce health risks.

5. Impact on water quality: Construction activities may have impact on water bodies due to disposal of wastes. The waste could be due to spillage of construction materials, oil and greases, and labour camp wastes. However, care needs to be taken to provide adequate sanitary facilities and drainage in the temporary colonies of the construction workers. Provision of adequate washing and toilet facilities with septic tanks and appropriate refuse collection and disposal system should be made obligatory. Contamination of groundwater can take place, if the dump containing above substances gets leached and percolate into the groundwater table. This is not the case with the present project as the activity does not involve usage of any harmful ingredients. Moreover activities are of short duration. Hence no impact on either ground or surface water quality is anticipated in the present project.

6. Accident Hazards: Internationally accepted on-site and off-site emergency measures recommended and accepted by metro rail systems has to be implemented to tackle the accident hazards due to failure of systems and operation as well as possible terrorist sabotages. Proper disaster management options will be formulated to tackle disruptions caused by natural calamities such as tidal waves associated with tsunamis or cyclones.

Financial & Economic Analysis

The Kochi Metro covering a route length of 25.612 KMs is proposed to be constructed with an estimated cost of Rs 3733 crore at August 2011 price level without taxes and duties but including land cost of Rs. 622 crore. The estimated cost with central taxes is Rs. 4141 crore.

The estimated cost at August-2011 price level includes an amount of Rs.20 Crore as one-time charges of security personal towards cost of weapons, barricades, and hand held and door detector machine etc. However, the recurring cost towards salary and allowances of security personal have not taken into account in IRR (Internal Rate of Return) calculation.

Analysis of Data

Satisfaction with the current transport system

Particulars	Transport System		Total
	Current System	Kochi Metro Rail	
Not Satisfied	4.00	9.00	13.00
	30.77%	69.23%	100.00%
	19.05%	11.39%	13.00%
	4.00%	9.00%	13.00%
Satisfied	17.00	70.00	87.00
	19.54%	80.46%	100.00%
	80.95%	88.61%	87.00%
	17.00%	70.00%	87.00%
Total	21.00	79.00	100.00
	21.00%	79.00%	100.00%
	100.00%	100.00%	100.00%

	21.00%	79.00%	100.00%
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Chi-square tests.			
Statistic	Value	df	Asymp. Sig. (2-tailed)
Pearson Chi-Square	.86	1	.354
Likelihood Ratio	.79	1	.373
Continuity Correction	.32	1	.574
N of Valid Cases	100		

H₀: People are not satisfied with the current transport system

H₁: People are satisfied with the current transport system

The p value obtained is .354

Since the p value is greater than the significance level ($\alpha = 0.05$), null hypothesis is accepted and alternative hypothesis is rejected. People are not satisfied with the current transport system, they are happy with the metro rail and the progress it is making.

Economic development of Kerala

Particulars	Reduced traffic	More employment	Living Standards	Controlled pollution	Total
No	7.00	.00	.00	.00	7.00
	100.00%	.00%	.00%	.00%	100.00%
	50.00%	.00%	.00%	.00%	7.00%
	7.00%	.00%	.00%	.00%	7.00%
Yes	7.00	42.00	23.00	21.00	93.00
	7.53%	45.16%	24.73%	22.58%	100.00%
	50.00%	100.00%	100.00%	100.00%	93.00%

	7.00%	42.00%	23.00%	21.00%	93.00%
Total	14.00	42.00	23.00	21.00	100.00
	14.00%	42.00%	23.00%	21.00%	100.00%
	100.00%	100.00%	100.00%	100.00%	100.00%
	14.00%	42.00%	23.00%	21.00%	100.00%

Chi-Square Tests			
Statistic	Value	df	Asymp. Sig. (2-tailed)
Pearson Chi-Square	46.24	3	.000
Likelihood Ratio	31.32	3	.000
N of Valid Cases	100		

H₀: Kochi Metro is not advantageous for the economic development of Kerala

H₁: Kochi Metro is advantageous for the economic development of Kerala

The p value obtained is .000

Since the p value is lesser than the significance level ($\alpha = 0.05$), null hypothesis is rejected and alternative hypothesis is accepted.

The conclusion is that Kochi Metro is advantageous for the economic development of Kerala

Job opportunities

Particulars	Employment status		Total
	Private Jobs	Public Jobs	
Job	14.00	75.00	89.00
	93.33%	6.67%	100.00%
	100.00%	1.16%	15.00%
	14.00%	1.00%	15.00%
NoJob	.00	11.00	11.00

	.00%	100.00%	100.00%
	.00%	12.79%	11.00%
	.00%	11.00%	11.00%
Total	14.00	86.00	100.00
	14.00%	86.00%	100.00%
	100.00%	100.00%	100.00%
	14.00%	86.00%	100.00%

Chi-square tests.			
Statistic	Value	df	Asymp. Sig. (2-tailed)
Pearson Chi-Square	92.25	2	.000
Likelihood Ratio	73.64	2	.000
N of Valid Cases	100		

H_0 : Kochi Metro does not create many employment opportunities

H_1 : Kochi Metro creates many employment opportunities

The p value obtained is .000

Since the p value is lesser than the significance level ($\alpha = 0.05$), null hypothesis is rejected and alternative hypothesis is accepted. It proves that Kochi Metro creates employment opportunities.

Findings

1. The urban people are supporting the metro system in the locality because it forms part of the standard of living in the city
2. Most of the people choose the public transportation for their daily travelling needs in the traffic city.
3. People use the different transport system according to their satisfaction level in travelling. The most preferred mode is public transport system.

4. It is proved that the Kochi Metro would generate employment.
5. Kochi metro will improve the economy of the Kerala state.

4.2 SUGGESTIONS

- Emphasis should be given on the flora while further construction is going on.
- The charges of transit can be fixed based on the spot demand of all class of people rather than fixing it on the basis of cost of technology at the starting stage.

4.3 CONCLUSION

Kochi Metro Project is one of the biggest urban Project undertaken in Kerala state. The Project was implemented through densely populated area along highly congested routes. It is seen that the project will definitely increase the standard of living as well as create job opportunities for the people in the area. From the study it can be seen that the Metro in Kochi has brought about a positive impact on the residents as well as the business and employed sector.

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