

An experiential study of contemporary metro rail services: Commuters experience journey in modern Chennai city

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Abstract

Transportation plays an important role in the development of a country and is an indicator of social and cultural life of its citizens. Status of people in a state with respect to Education, Employment and Health gets affected by prevailing transportation system. So it is very important for any city to have an effective public transportation system and the same has to be managed to face upcoming, future challenges and to ensure effectiveness in their operations. The introduction of the Chennai Metro requires the identification of the changes brought out by it in the transport sector of the economy. Most importantly, Chennai metro contributes to the diversion of a very high proportion of current passenger traffic from road to Metro and serves part of the growing passenger traffic demand in Chennai. As a result, there will be a reduction in the number of buses, passenger cars and other vehicles carrying passengers on Chennai roads with the introduction of the Metro. The Metro also brings about a reduction in air pollution in Chennai because of the substitution of electricity for petrol and diesel and reduced congestion on the roads. The main aim of this research articles is to throw light on the experience journey of the commuters on metro train transportation system and also to study the ways and techniques followed by CMRL to retain existing passengers and also to attract new passengers in modern Chennai city.

Keywords: public transportation, commuter trip, commuters experience mgmt, mass rapid transit system

Introduction

The metro railway services which has come as a boon for the people of the India is expanding in leaps and bounds. Growing cities, growing population and growing traffic has invariably called for a shift from private modes of conveyance to public transport. A glance at the world's developing nations indicates that well planned Mass Rapid Transit Systems MRTS exist successfully. India however has lagged behind though its first metro, the Kolkata Metro, started working almost 25 years ago. While researches show that the ideal modal share of public transport should be around 70%, however it is in tune to only 35%–40% in India's metro cities. India is looking to create a world class infrastructure with its existent Kolkata and Delhi Metros with the addition of Mumbai, Bengaluru, Hyderabad, Chennai, Jaipur, and Kochi metros in the next few years while proposals for MRTS for Pune, Chandigarh, Ahmedabad, Kanpur, Ludhiana, Bhopal, Indore and Faridabad are being chalked out. The Chennai metro Rail is a rapid transit system serving the city of Chennai, Tamil Nadu, India. The system commenced revenue service in 2015 after partially opening the first phase of the project, which consisted of two colour-coded lines covering a length of 54.1 kilometer's (33.6 mi). Chennai Metro will be the 3rd largest metro system in India after Delhi Metro and Kolkata Metro completion. The Chennai metro route is divided into 2 corridors connecting the gateways of the city railway stations, Mofussil bus terminus and the airport together and stretches to a 45 km network. There are 35 stations planned of which 17 are elevated and the rest are underground. The total cost of building the metro is estimated at Rs14500 Crore. The rider-

ship based on the traffic modelling for 2022 is estimated to carry 700,000 people which at 5.4% would grow to 1.24 million by 2026. The Metro rail Asia – Asia's premier rail event with a special focus on India proves to be a high-value networking and knowledge-sharing of key metro authorities and operators with discussions over India's extensive metro growth. The primary objective of the study is to identify the gap between the expectations and actual experiences of the commuters with respect to various attributes of metro rail services in modern Chennai city.

Literature of Review

Dr. Som Sankar Sen (2012) in their paper "Kolkata Metro Railway and Commuters Fulfillment: An Empirical Study" concluded that in today's competitive scenario consumer fulfillment is the first priority. For this, business is to meet the expectation of its customers. The organization should aim not only at satisfying the commuters but also focus on the delighting them. Thus it has become essentials for organization to identify the factors that affect commuters satisfaction level and consciously measure them so as to try and bring about the necessary changes on the basis of commuters perception and requirements.

Sudin Bag (2013) has recited that the majority of the respondents avail the metro services for reaching the ultimate destination, so it should be need smoother and better system of ticketing and information regarding the arrival and departure of trail. It is also important to improve the quality of security at the time of journey to reduce pick pocket and others.

Vivek Kumar and Vikas Rastogi (2014) reveal metro Rail

transport is one of the major modes of transportation, so it must offer high comfort level for the commuters and the staff. However, the comfort that commuters experience is a highly complex and individual phenomenon. The improvement of passenger comfort while travelling has been the subject of intense interest for metro train services providers. He also summarized Metro City Railway services need to be modernized to provide world class passenger amenities and services to the large multitude of passengers using these stations.

Debabrata Das and Sharfuddin (2015) conducted a study on “Importance of Metro Rail in Public Transport Network: A case study of Delhi”. The researcher attempts to devise a model to map a few of the most strategic location of Delhi using the available modes of public transportation i.e. bus and metro rail, based on distance, time and cost constraints. In the research they found to avoid congestion, best possible alternative route that should be taken as metro route at peak hours, and in case of travel cost consideration, metro route has higher travelling cost in comparison to bus route. The cost minimization can be possible by reducing waiting time and restructuring the travelling cost in case of metro rail.

Need for the study

Transport sector occupies a place of pivotal importance in Indian Economy. The tremendous growth in transport sector has expanded trade, commerce and industries phenomenally. Technological advancement has resulted in newer vehicles with advances features like metro rail in Chennai city. The essential of this study was to understand the antecedents of Commuters Experience in a metro rail transport system. This holistic conceptualization of the commuters experience will help the govt focus on delivering a comprehensive offering to the metro rail system in order to provide him a favorable journey. The metro rail industry will benefit immensely from understanding the factors which will lead to commuter’s experience of a metro rail system. This will in turn help them focus their resources on areas of immediate attention and strengthen their offerings to the commuters.

Statement of the problem

The Indian railway is one of the largest and fastest modes of transport connected with almost every state and being the backbone of Indian economy. It is necessary to study commuter’s experiences and how commuters interact with services, technology and processes at metro rail in Chennai city. The servicescape plays a vital role in influencing the commuters experience and that too needs to be explored. Finally the outcome of the metro rail service and its relationship with commuters experience needs to be researched. The present study has been undertaken with a view to identify and analyse the factors affecting the experience level of commuters with the metro rail services in Chennai city.

Objective of the study

- To analyse the direction and magnitude of the effect of those factors on commuters overall journey experience with reference to metro rail services in Chennai city.
- To identify the gap between the expectations and actual experiences of the commuters with respect to various

attributes of metro rail services in Chennai city.

- To find out the relationship between profile variables of the commuters and the related travel variables in metro rail services.
- To analyze the attitude of the commuters towards facilities and convenience provided ensuring sophisticated service in metro rail.
- To study the effect of the usage of Self-Service Technology on Commuters Experience in metro rail services.

Scope of the study

The study is mainly focused on the commuter’s experience of journey level from the services offered by metro rail transport system. Every aspect related to railway service like ticket availability, quality of travel, staff behavior, safety, frequency of train, etc are studied at different level of the research. The sample population is chosen from Chennai city. The research is mainly conducted to obtain the quality of the service proving by the metro rail transport system

Research Methodology

Research Design

The research design used for the study is descriptive. The major purpose of using such a design is description of the state of affairs as it exists at present.

Sampling Design

Population

The population of the study consists of the different commuters like students, professional, employees and businessman. The sample size of the actual study consisted of 70 commuters travelling in metro rail services in in Chennai city.

Sampling Technique

The sampling technique used was non-probability sampling method is adopted in this study. It refers to the technique where the probability of each cases being selected from the total population is known. The sampling technique used was judgement sampling where sample units are selected from special group of the commuters.

Data Collection Method

Data was collected only through primary source. Primary data was collected through questionnaires, which were administered through face-to-face interview of the commuters.

Data Analysis

Reliability Test

Table 1: Reliability Statistics

Cronbach's Alpha	N of Items
.924	26

Inference: The Cronbach’s apha coefficient for 26 items is 0.924 suggesting that the items have high level of internal consistency.

Chi Square Test

Null hypothesis (H₀): There is no significant difference between the frequency of travel by the commuters and their occupation level.

Alternate hypothesis (H₁): There is significant difference between the frequency of travel by the commuters and their occupation level.

Table 2: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	121.475 ^a	9	.000
Likelihood Ratio	107.434	9	.000
Linear-by-Linear Association	.055	1	.814
N of Valid Cases	70		

a. 11 cells (68.8%) have expected count less than 5. The minimum expected count is .70.

Inference: The Pearson chi square significant value is 0.000 which is less than 0.05. Hence Reject Null hypothesis. There is significant difference between the frequency of travel by the commuters and their occupation level.

the journey in metro rail transportation service. The influence of independent variables Age, Gender, Marital Status, Occupation, income, frequency of travel on in metro rail is shortly estimated through multiple regression analysis and the results are presented below:

Multiple Regression Analysis

Influence of independent variables on overall experience of

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.697 ^a	.485	.445	.607

a. Predictors: (Constant), Annual income per month, Gender, Marital Status, Occupational Background, Age

From the above table, it is found that R Square Value is 0.485 and adjusted R Square is 0.445 with the standard error of estimate as 0.607. It implies that all the independent variables

explain 2.4% and regression fit is verified in the following ANOVA table:

Table 4: ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	22.245	5	4.449	12.066	.000 ^b
	Residual	23.598	64	.369		
	Total	45.843	69			

a. Dependent Variable: Rate the overall experience of the journey

b. Predictors: (Constant), Annual income per month, Gender, Marital Status, Occupational Background, Age

From the above table, it is found that $f = 12.066$, $p = 0.000$ are statistically significant at 5% level. This implies that the regression fit is significant and concludes that the cumulative influence of independent variables on reliability is

statistically significant. Hence the independent influence of these variables on reliability is analyzed in the following table:

Table 5: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	4.122	.667		6.183	.612
	Gender	.262	.153	.161	1.715	.183
	Age	-.422	.135	-.500	-3.136	.003
	Marital Status	-.966	.244	-.596	-3.952	.557
	Occupational Background	-.322	.068	-.450	-4.738	.000
	Annual income per month	.183	.084	.221	-2.182	.033

a. Dependent Variable: Rate the overall experience of the journey

Inference: From the above table, it is found that the age of the commuters are ($t = -3.136$, $p = 0.003$), Income of the Commuters ($t = -2.182$, $p = 0.033$) and occupational ($t = -4.738$, $p=0.000$) statistically significant at 5% level. Therefore it can be concluded that the experience of the journey depends only on the age, occupation and the income of the commuters.

Mann-Whitney Test

Null hypothesis (H₀): There is no significant difference between the frequency of travelling in metro rail services and the commuter's gender.

Alternate hypothesis (H₁): There is significant difference between the frequency of travelling in metro rail services and the commuter's gender.

Table 6: Ranks

	Gender	N	Mean Rank	Sum of Ranks
Frequency of travel in Metro Rail Transport ?	Male	39	37.92	1479.00
	Female	31	32.45	1006.00
	Total	70		

Table 7: Test Statistics^a

	Frequency of travel in Metro Rail Transport ?
Mann-Whitney U	510.000
Wilcoxon W	1006.000
Z	-1.215
Asymp. Sig. (2-tailed)	.225

a. Grouping Variable: Gender

Inference

Since $p\text{-value} = 0.225 \geq 0.05 = \alpha$, we accept the null hypothesis. At the $\alpha = 0.05$ level of significance, there exists enough evidence to conclude that there is a no difference between the frequency of travelling in metro rail services and the commuter’s gender.

Findings

- The Cronbach’s alpha coefficient for 26 items is 0.924 suggesting that the items have high level of internal consistency.
- Using chi square Analysis it is found that the Pearson chi square significant value is 0.000 which is less than 0.05. Hence Reject Null hypothesis. There is significant difference between the frequency of travel by the commuters and their occupation level.
- Using Mann Whitney Test it is found that $p\text{-value} = 0.225 \geq 0.05 = \alpha$, we accept the null hypothesis. At the $\alpha = 0.05$ level of significance, there exists enough evidence to conclude that there is a no difference between the frequency of travelling in metro rail services and the commuter’s gender.
- Using Multiple Regression Analysis it is estimated that the experience of the journey depends only on the age, occupation and the income of the commuters.

Suggestions

The suggestions and recommendations in order to make the packer and movers services more effective as follows

- Commuters feel the need for the introduction of modern facilities and technologies to enhance the passenger facilities like Chennai mobile rail app to IOS user, ATMs, cyber cafe, upgraded retiring rooms, waiting rooms, station buildings, lavatories etc. at major stations. The I-ticket and E-ticket may also be brought through more features and opening of more UTS centers will increase the commuter’s satisfaction.
- Wi-Fi connectivity and commuters guide facility may be introduced to help the passengers in today’s growing needs of people as well as business.
- Provision of wheel chairs at stations and reserved spaces for wheel chairs in metro train to be provide to the differently abled commuters.
- Provision of ladies CISF staff and Patrolling team to be provide to the women’s commuters travelling in the metro rail.

Conclusion

City transportation is a necessity for ever growing population in Chennai, one of the busy cities in India. Chennai has a large population in the age-groups of 18-30 with a lot of migrant population in search of better jobs and better lives. Chennai Metro should use this population dividend to its advantage by continuing to innovate and adapt latest technology. Extending Chennai Metro’s service through the night, running an express service, recharging Smart cards online etc could be some important steps in that direction. People from different societal, financial, educational background, with different types of transportation needs, male and female commuters from different age groups travel by metro rail to satisfy their intra city travel needs. In spite of travelling being one of the basic needs, commuters have their expectations from such a service and service providers. The level, to which their expectations are met, indicates their satisfaction about the service and service provider. On the basis of this study some suggestions has been made. If the suggestive measurements have been considered by the Chennai Metro Rail limited, it is hope that the Indian Railways will shine and bring grandeur to our country in the near future.

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