# TRAVELS PATTERN AND SOCIO-ECONOMIC CHARACTERISTICS OF RAIL TRANSPORT PASSENGERS IN LAGOS METROPOLIS, NIGERIA

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## ABSTRACT

*This paper addressed the relationships between the travels pattern and socio-economic characteristics of the rail patrons in metropolitan Lagos. Data used were derived from both primary and secondary sources. The primary data focused on train passengers in order to capture their socio-economic and travel characteristics. Passengers were purposively selected from a total number of 1,100 passengers on board. A sample size of 210 was used and this represented the total number of questionnaires that were administered for the study. The study adopted the use of descriptive and inferential data analytical tools. Travel purpose showed that, 69.5% of the patrons travelled for employers' and private businesses. On the frequency of travels, 53.8% of the train patrons made between 9 and 10 trips per week. The maximum trip distance was 35 kilometers and 54.8% of the train patrons' traveled between 22 and 35 kilometers per day. Besides, 77.1% of the patrons spent between 60 and 120 minutes in a trip made in Lagos metropolis. The correlation analysis revealed a negative relationship between the travel demands (trip frequency) and passengers' travel time. Also, it revealed a positive relationship between marital status and age of passengers. This was supported by the stepwise multiple regression analysis. The study concluded that, the socio-economic characteristics and travel pattern variables should be complemented by policy statements for the development of rail transport system in Lagos metropolis.*

***Keywords:*** *Travel Patterns, Socio-Economic characteristics, Rail Transport*

## INTRODUCTION

The significance of transportation in the development of man, national integration and economic growth cannot be overemphasized. The role played by the rail transport within this context is very significant as it helps in the movement of goods, people, services and information at a considerable low cost (Fadare and Omole, 1991). In Nigeria, rail transport accounts for less than a half per cent in the gross domestic products of the economic sector (Eugene, 2007). Although rail has always contributed a tiny proportion of value-added in transportation, its share of value-added continues to decline because road transport (freight and passenger) has virtually taken over all the traffic previously conveyed by rail (Eugene, 2007). Railway is the oldest of all the conventional and contemporary land transport modes in Nigeria.

The Nigeria railway has no doubt contributed to the economic and social growth of Nigeria. Apart from the fact that quite a large number of people travel by rail, large consignments of freights are as well carried to the different part of the country. Industrial materials like tin coal, columbite etc are also conveyed by rail to areas of need (Tamuna, 1964). The performance of the Nigeria railway corporation is however inhibited by many inherent problems. Many of such problems are expressed in the federal ministry of transport report of 1983 and the federal republic of Nigeria fourth national development plan of 1981.

The Nigerian Railway system pioneered the rapid opening up of geographical area called Nigeria to development and represents the oldest modern transport mode in Nigeria. Railway development in Nigeria was initiated by private companies. This was later taken over by the then Colonial Government as Government Railway for the purpose of easy and cheap movement of bulk goods from the hinterlands to the seaports and vice versa. Between 1879 and 1892, various applications for concession to construct rail network by private interest were received by the Colonial Government (The Nigerian Railway Corporation, 2006).

The NRC Management therefore is to operate in a manner that will ensure continuous growth and to break even at least, by marketing an efficient technically competent transportation service in pursuit of the country's Socio-Economic development, develop and market new business capabilities in areas complementary to existing railway activities, entering into other business opportunities which are consistent with the nest management practice of existing assets, restoring the Corporation's public image through quality service, continuously engage in the rehabilitation of existing railway telecommunications and signalling, track culverts and bridges, retooling of workshops and sheds reorganization, development and control of manpower, improving running maintenance standard of rolling stock, improving the main line track on the railway to provide for elimination of sharp curves and steep gradients so as to permit higher speed of trains on the existing 1067mm gauge, and adopting measures to reduce accidents by intensifying campaigns for improved knowledge of operating staff in working rules and regulations, intensifying commercial drive towards securing and retaining a large market of the business, laying a sound basis for traffic budgeting and performance accountability (The Nigerian Railway Corporation, 2006).

An overview of the operational performance of the Nigerian Railway Corporation especially between 1955 and 1989 paints a picture of boom in its operations up till 1974 when it started a process of decline in its business operations. The underlying factors for this situation is what the Nigerian Railway watchers have called "the systemic decay of the Corporation's entire infrastructure, manpower and institutions in the last three to four decades. A graphic picture of this can be shown using the statistical figures of the Corporation's passenger and freight traffic which show that the Corporation in 1964 carried 11,288,000 passengers and 2,960,000 tonnes of freight. It was observed that in 1974, these figures had dropped to 4,342,000

passengers and 1,098,000 tonnes of freight (The Nigerian Railway Corporation, 2006). Between 1974 and 1989, the Corporation's performance profile showed a fluctuating trend. Thus, figures for the Corporation performance in 1995 showed a marginal decline form 6,755,000 passengers and 1,612,000 tonnes of freight to 6,520,000 and 202,000 tonnes in 1989 (Agunloye, 2008).

The rail system in Nigeria is pre occupied by two main functions, first to carry passengers. It is very established that rail managements tend to make more revenue from freight than they do from passengers' traffic (Olanrewaju, 1986). For instance, the development of railways in Nigeria by the colonial masters in the 19th century is consequently upon the need to move industrial and agricultural goods from the hinterland to the port of export (Olanrewaju, 1986). More findings support that there have not been significant changes since then (Olanrewaju 1986, Tolofari and Gubbins 1983, Oyekunle 1988).

Rail construction work started in Lagos with the single-track system of 1067 mm (3'6") gauge (NRC, 2007). The Nigeria Railway Corporation, especially the Lagos metropolis railway districts, has over the years been going through some difficult times. Some of its challenges in Lagos metropolis include poor government funding, old narrow guage tracks, poor gradient, poor communication and signaling equipment, poor road access, lack of parts for maintenance and dilapidated engines. Despite these challenges, the corporation has managed to provide skeletal intra-city shuttle services in Lagos State (Eugene, 2007), which extends a little into the neighbouring Ogun State to widen its market and increase revenue.

From all indications, the passenger service is a social service because it involves the movement of many people at a considerably cheap cost. However, classes and types of coaches used for passenger traffic vary from one place to another. Schumer (1964) coaches arranged in classes with varying levels of services and cost. This has implication for patronage and indeed passengers demand for rail services.

Many factors affects the travel characteristics of passengers and particularly the choice of mode of transport for example, income, number of cars owned, family size occupation , and sex have been found to influence the choice of mode and the travel behaviour of the individuals (Das, 1978; Sammons and Hall 1974 and Shembesh et al, 1983; Fadare, 1989). From the individuals point of view the nature of the transport system expressed in terms of speed, safety, adequacy, and frequency of service are important factors. Others are cheapness and level of comfort provided by modes (Schumer, 1964). It is also noted that modal choice is often influenced by journey length, reliability and cost of alternative modes, availability of specific travel modes, age and the socio status of the trip makers. among the other main works which demonstrate a common opinion that socio-economic characteristics of trip makers are crucial to trip frequency, cost, length, and modal choice of trips are those of Kutter (1973), Shembesh et al (1983) and Fadare (1978, 1989).

Lagos is located in Lagos State (southwest Nigeria) and lies approximately between longitude $2^{o}42'$E and $3^{o}42^{o}$E and latitude $6^{o}22'$N and $6^{o}52'$. The state southern

boundary is framed by about 180 kilometres of Atlantic coastline while the northern and eastern boundaries are framed by Ogun State. The Republic of Benin formed the western boundary. The state is the smallest state in Nigeria in land area with an area of about 358,861 hectares or 3577km$^2$ (Odumosu, 1999). This represents only 0.4 percent of the entire area of Nigeria. This size accommodates about 10 percent of the entire 140 million approximate population of the country.

Lagos metropolis is the most urbanized city of Nigeria (Ayeni, 1979). It is the economic capital of Nigeria and houses more than 50% of manufacturing industry outfits. It is the nodal point of all transport modes - air, water, road and rail. The urban population growth rate of metropolitan Lagos far exceed any other urban centre in Nigeria, such that the traffic in Lagos is characterized by heavy traffic congestion, pollution, accident, breakdown of transport infrastructure and other negativities. The Lagos railway started under the management of the Nigeria Railway Corporation in 1896, with its terminus at Iddo. The rail lines run in a north south direction and still maintain the steel track of the pre colonial type. Road network development started in the second half of the 19th century with the initial opening up of the Marina. The administration of Governor Glover opened up the Broad Street in Lagos. He also linked up the then Victoria Street (now Nnamdi Azikwe Street) with the Mainland in 1866. By 1900 the city had about 15 kilometers of road over which horse drawn carriages were pulled. By 1956 two main arterial roads of greater Lagos had become prominent links with the hinterlands. They are the Ikorodu Road and Agege Motor Road both of which run in north-south direction with the Agege Motor Road running parallel with the railway line.

The absence of current socio-economic and trip data on rail transport service in Lagos state has implications on planning by transport and urban planners as well as policy makers. Since it has been established that, the understanding of the socio-economic and trip attributes of rail passengers are indeed significant in estimating future demand and patronage of the mode, this paper therefore aimed at examining the relationship between the socio-economic and travels pattern of rail transport passengers in Lagos metropolis.

## METHODOLOGY

The data for this study were obtained through questionnaire administration. Questionnaires were administered with the total number of passengers on board between the origin and destination of a particular trip covered by the study. Each train wagon has an average of ten coaches, each having a seating capacity for 90 passengers thus, the total number of passengers is about nine hundred excluding the standing passengers. The standing passengers per coach have an average of 20 standing passengers. Consequently, about 200 standing passengers were on the train. This put the sample frame (the train passengers) as one thousand, one hundred passengers. A sample size of 20% was used for this study. This translates to two hundred and

twenty passengers and this represents the total number of questionnaires that were to be administered. However, two hundred and ten questionnaires were duly completed and analysed. This eventually puts the sample size at 19.1%. The purposive sampling technique was used for the questionnaire administration because of lack of pre-determined population in order to obtain data on socio-economic characteristics (gender, age, marital status, education level, employment status, monthly income of respondents) and trip characteristics (weekly trip frequency, trip purpose, trip cost, trip distance and trip time). The study adopted the use of descriptive (frequency tables) and inferential (Pearson's moment correlation co-efficient and stepwise multiple regression analysis) data analytical tools. The correlation analysis was used to explain the relationship between socio-economic and trip characteristics while the multiple linear regression analysis was used to confirm the relationship using the SPSS data analyses software programme.

The regression equation usually used for this type of analysis is:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_nX_n + c$$

Y=dependent variable (travels pattern (trip frequency) measured by weekly travels)
*a*=constant
$X_1X_n$=independent variables (passengers travel time measured by minutes, monthly income measured by money, age measured by number of years, patrons' arrival time measured by minutes, education measured by tertiary, secondary, primary and informal) $b_1b_n$=coefficients of independent variables
*c*=random error term measuring the deviation of the observed trips (*Y*)
The dependent variable in this study is the travel pattern measured by weekly trip frequency of train patrons. The independent variables are gender, age, marital status, education level, employment level, income level, trip purpose, trip cost, trip distance and trip time.

## RESULTS AND DISCUSSION

The gender analysis as shown on table 1 indicates that, in the 1st to 9th coaches of the train, among the respondents in each, the male accounted for 5.7% while female accounted for 4.3% respectively. In the 10th coach of the train, the male respondents accounted for 4.9% while female accounted for 5.1% respectively. In the entire coaches, the study observed that majority of the respondents were males while 43.8% were females. This does not truly reflect the gender ratio in Lagos but indicated that, males were more on board during the study than the females.

The age analysis as shown on table 2 revealed the various responses of respondents in each of the coaches. In the overall, 74.3% of the respondents were between the ages of 20-60 years of age. This indicated that, more working class people were on board during the study than very young and elderly. It also suggested that school children and the elderly do not often make use of train service. The difficulty or boarding and disembarking from the train may be responsible for the low patronage of these group of people.

The analysis of the marital status (table 3) revealed the various responses of respondents at each coach of the train even as it shows that 55.7% of the respondents were married. 29.0% were single and 10.0% were divorced. This suggested that, majority of the train passengers in Lagos are married. This corroborated the result of age analysis on the table 1. The analysis of the level of education of respondents as shown on table 4 revealed that, 53.4% of the respondents had the primary and secondary schools certificates. This suggested that, the people/passengers with the lowest certificates (primary and secondary) were more on board than the higher certificate holders. This also suggested that all the passengers on board are literate and consequently a high level of literacy among train passengers in Lagos.

The study found from the entire coaches on table 6 that, the respondents who earn less than twenty five thousand naira per month were the majority among the passengers. It also showed that the passengers who earn between twenty five and fifty thousand naira were 27.6%, while those who earn between 50,000 and 75,000 are 12.4%. Those who earn above 75,000 were in the minority. This suggested that, low income earners dominated train passengers and this was an indication that, train passengers service was affordable.

The analysis of the employment status (table 5) revealed from the ten coaches that, 50% of the respondents were employed. This suggested that, a reasonable proportion of train passengers are working class and that the retired, unemployed and students were users of train passenger service in Lagos. The study implied from table 7 that, the passengers who made between 1-2 trips per week were 8.6%, 3-4 trips were 10.0%, 5-6 trips were 9.0%, 7-8 trips were 5.7%, 9-10 trips were 53.8% and 10-11 trips were 12.9% respectively. This suggested that, most of the passengers made higher trips (9-10 trips) per week and were likely to depend more on train other than other modes.

The study as shown on table 8 that the train patrons in the ten coaches traveled because of visitation, employers' business, shopping, leisure, private businesses and some other untold reasons. This study indicated that, the major reason why people traveled through train in Lagos metropolis was because of employers' and private businesses. The study also suggested that the least reason for the trips that were made through rail transport was because of leisure. The study showed from the ten coaches of the train on table 9 that 88.6% of the entire respondents opined that the cost of the various trips made was adequate. The trip distance of respondents on table 10 explained that the maximum travel/trip distance was 35 kilometers. It also indicated that the majority of the train patrons traveled between 22 and 35 kilometers per day in metropolitan Lagos. The passengers travel time as shown on table 11 revealed that majority of the respondents spent between 60 and 120 minutes in an average train trip made in Lagos metropolis.

The study revealed on table 12 that the only significant variable in the correlation of the socio-economic and travels pattern of passengers is the trip time. Besides, there was a negative relationship between the frequency of rail usage and

trip time. This indicated that, the higher the trip time, the lower the weekly trip frequency. However, both the weekly trip frequency and trip time are on different directions. This implies that a unit increase in the number of minutes that a trip takes would result to a 0.203 decrease in the number of trips per week. The other variables with significant relationship are travel distance and patrons' arrival time, travel time and patrons arrival time, marital status and age, education and age, and education and marital status respectively.

The regression analysis explains the structural relationship among the variables of socio-economic and trip characteristics. The rationale for this analysis is to provide the factor(s) that are salient to the explanation of rail patronage in Lagos metropolis. This regressed the insignificant variables and confirms the correlation on table 12. This study revealed from tables 13-15 that, the most significant variable that could enhance the travel demands of rail usage is the patrons' travel time in Lagos metropolis. The other variables, although not significant to travel demands, are gender, age, marital status, education level, employment level, income level, trip purpose, trip cost and trip distance (table 15). Based on the empirical evidence, the income, age and travel cost, travel purpose cannot be overemphasized in the forecasting of the travel demands of passengers.

**Table1:** Gender of Respondents

| Coaches | Male | | Female | | Total | |
|---|---|---|---|---|---|---|
| | Frequency | % | Frequency | % | Frequency | % |
| 1 | 12 | 5.7 | 9 | 4.3 | 21 | 10 |
| 2 | 12 | 5.7 | 9 | 4.3 | 21 | 10 |
| 3 | 12 | 5.7 | 9 | 4.3 | 21 | 10 |
| 4 | 12 | 5.7 | 9 | 4.3 | 21 | 10 |
| 5 | 12 | 5.7 | 9 | 4.3 | 21 | 10 |
| 6 | 12 | 5.7 | 9 | 4.3 | 21 | 10 |
| 7 | 12 | 5.7 | 9 | 4.3 | 21 | 10 |
| 8 | 12 | 5.7 | 9 | 4.3 | 21 | 10 |
| 9 | 12 | 5.7 | 9 | 4.3 | 21 | 10 |
| 10 | 10 | 4.9 | 11 | 5.1 | 21 | 10 |
| Total | 118 | 56.2 | 92 | 43.8 | 210 | 100 |

***Source:*** Survey, 2010

**Table 2:** Age group of respondents

| Coaches | < 20 years | | 20-40 years | | 41-60 years | | 61 & above | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Freq. | % | Freq. | % | Freq. | % | Freq. | % | Freq. | % |
| 1 | 3 | 1.4 | 8 | 3.8 | 7 | 3.3 | 4 | 1.9 | 22 | 10.4 |
| 2 | 3 | 1.4 | 8 | 3.8 | 7 | 3.3 | 3 | 1.4 | 21 | 9.9 |
| 3 | 3 | 1.4 | 8 | 3.8 | 7 | 3.3 | 3 | 1.4 | 21 | 9.9 |
| 4 | 3 | 1.4 | 8 | 3.8 | 7 | 3.3 | 3 | 1.4 | 21 | 9.9 |
| 5 | 3 | 1.4 | 8 | 3.8 | 7 | 3.3 | 3 | 1.4 | 21 | 9.9 |
| 6 | 3 | 1.4 | 8 | 3.8 | 8 | 3.8 | 3 | 1.4 | 21 | 10.4 |
| 7 | 4 | 1.9 | 8 | 3.8 | 8 | 3.8 | - | - | 20 | 9.5 |
| 8 | 4 | 1.9 | 8 | 3.8 | 8 | 3.8 | - | - | 20 | 9.5 |
| 9 | 4 | 1.9 | 8 | 3.8 | 8 | 3.8 | - | - | 20 | 9.5 |
| 10 | 5 | 2.6 | 8 | 3.8 | 9 | 4.5 | - | - | 22 | 10.9 |
| Total | 35 | 16.7 | 80 | 38.1 | 76 | 36.2 | 19 | 9.0 | 210 | 100 |

***Source:*** Survey, 2010

**Table 3:** Marital Status of Respondents

| Coaches | Single | | Married | | Divorced | | Others | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Freq. | % | Freq. | % | Freq. | % | Freq. | % | Freq. | % |
| 1 | 6 | 2.8 | 11 | 5.2 | 3 | 1.4 | 5 | 2.5 | 25 | 11.9 |
| 2 | 6 | 2.8 | 11 | 5.2 | 3 | 1.4 | 3 | 1.4 | 23 | 9.5 |
| 3 | 6 | 2.8 | 11 | 5.2 | - | - | 3 | 1.4 | 20 | 9.4 |
| 4 | 6 | 2.8 | 11 | 5.2 | 3 | 1.4 | - | - | 20 | 8 |
| 5 | 6 | 2.8 | 11 | 5.2 | - | - | - | - | 17 | 9.9 |
| 6 | 6 | 2.8 | 11 | 5.2 | 4 | 1.9 | - | - | 21 | 8 |
| 7 | 6 | 2.8 | 11 | 5.2 | - | - | - | - | 17 | 9.9 |
| 8 | 6 | 2.8 | 11 | 5.2 | 4 | 1.9 | - | - | 21 | 8 |
| 9 | 6 | 2.8 | 11 | 5.2 | - | - | - | - | 17 | 9.9 |
| 10 | 7 | 3.8 | 18 | 8.9 | 4 | 1.9 | - | - | 29 | 8 |
| Total | 61 | 29 | 117 | 55.7 | 21 | 10 | 11 | 5.3 | 210 | 100 |

***Source:*** Survey, 2010

**Table 4:** Education Levels of Respondents

| Coaches | Primary | | Secondary | | Technical | | Tertiary | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Freq. | % | Freq. | % | Freq. | % | Freq. | % | Freq. | % |
| 1 | 4 | 1.9 | 11 | 5.7 | 3 | 1.4 | 5 | 2.4 | 23 | 11.4 |
| 2 | 4 | 1.9 | 6 | 2.8 | 4 | 1.9 | 6 | 2.8 | 20 | 9.4 |
| 3 | 4 | 1.9 | 6 | 2.8 | 5 | 2.3 | 7 | 6.0 | 22 | 13 |
| 4 | 5 | 2.4 | 6 | 2.8 | 3 | 1.4 | 5 | 2.4 | 19 | 9 |
| 5 | 4 | 1.9 | 7 | 3.3 | 6 | 3.1 | 5 | 2.4 | 22 | 10.7 |
| 6 | 4 | 1.9 | 8 | 3.8 | 3 | 1.4 | 5 | 2.4 | 20 | 9.5 |
| 7 | 5 | 2.4 | 6 | 2.8 | 4 | 1.9 | 5 | 2.4 | 20 | 9.5 |
| 8 | 4 | 1.9 | 6 | 2.8 | 3 | 1.4 | 5 | 2.4 | 18 | 8.5 |
| 9 | 6 | 2.9 | 6 | 2.8 | 4 | 1.9 | 5 | 2.4 | 21 | 10 |
| 10 | 4 | 1.9 | 6 | 2.8 | 4 | 1.9 | 5 | 2.4 | 19 | 9 |
| Total | 44 | 21 | 68 | 32.4 | 39 | 18.6 | 59 | 28 | 210 | 100 |

***Source:*** Survey, 2010

**Table 5:** Employment Status of Respondents

| Coaches | Formal | | Informal | | Retired | | Unemployed | | Students | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Freq. | % | Freq. | % | Freq. | % | Freq. | % | Freq. | % | Freq. | % |
| 1 | 4 | 1.9 | 5 | 2.4 | 5 | 2.4 | 3 | 1.4 | 4 | 1.9 | 21 | 10 |
| 2 | 4 | 1.9 | 6 | 2.8 | 5 | 2.4 | 5 | 2.5 | 5 | 2.4 | 25 | 12 |
| 3 | 4 | 1.9 | 6 | 2.8 | - | - | 3 | 1.4 | 6 | 2.9 | 19 | 9 |
| 4 | 5 | 2.5 | 6 | 2.8 | 5 | 2.4 | 3 | 1.4 | 4 | 1.9 | 23 | 10.9 |
| 5 | 4 | 1.9 | 5 | 2.4 | - | - | 6 | 2.9 | 4 | 1.9 | 19 | 9.1 |
| 6 | 6 | 2.9 | 5 | 2.4 | 4 | 1.9 | 3 | 1.4 | 4 | 1.9 | 22 | 10.5 |
| 7 | 8 | 3.8 | 7 | 3.3 | - | - | 4 | 1.9 | 5 | 2.4 | 24 | 11.4 |
| 8 | 4 | 1.9 | 8 | 3.9 | 3 | 1.4 | 4 | 1.9 | 7 | 3.3 | 26 | 12.4 |
| 9 | 4 | 1.9 | 4 | 1.9 | - | - | 3 | 1.4 | 3 | 1.4 | 14 | 7.1 |
| 10 | 5 | 2.4 | 5 | 2.4 | - | - | 3 | 1.4 | 4 | 1.9 | 17 | 8.1 |
| Total | 48 | 22.9 | 57 | 27.1 | 22 | 10.5 | 37 | 17.6 | 46 | 21.9 | 210 | 100 |

***Source:*** Survey, 2010

**Table 6:** Monthly Income Level of Respondents

| Coaches | <25,000 | | 25,000-50,000 | | 50,001-75,000 | | 75,001 & above | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Freq. | % | Freq. | % | Freq. | % | Freq | % | Freq. | % |
| 1 | 10 | 4.8 | 6 | 2.9 | 5 | 2.5 | 3 | 1.4 | 24 | 11.6 |
| 2 | 10 | 4.8 | 6 | 2.9 | 4 | 1.9 | 3 | 1.4 | 23 | 11.0 |
| 3 | 11 | 5.2 | 9 | 4.0 | - | - | 3 | 1.4 | 23 | 10.6 |
| 4 | 12 | 5.7 | 5 | 2.4 | - | - | 4 | 1.9 | 21 | 10.0 |
| 5 | 14 | 6.5 | 6 | 2.9 | 4 | 1.9 | 5 | 2.5 | 29 | 13.8 |
| 6 | 10 | 4.8 | 4 | 1.9 | 3 | 1.4 | - | - | 17 | 8.1 |
| 7 | 11 | 5.2 | 6 | 2.9 | - | - | - | - | 17 | 8.1 |
| 8 | 10 | 4.8 | 6 | 2.9 | 3 | 1.4 | - | - | 19 | 9.1 |
| 9 | 10 | 4.8 | 6 | 2.9 | 3 | 1.4 | - | - | 19 | 9.1 |
| 10 | 10 | 4.8 | 4 | 1.9 | 4 | 1.9 | - | - | 18 | 8.6 |
| Total | 108 | 51.4 | 58 | 27.6 | 26 | 12.4 | 18 | 8.6 | 210 | 100 |

***Source:*** Survey, 2010

**Table 7:** Passengers' Weekly Trip Frequencies

| Coaches | 1-2 times | | 3-4 times | | 5-6 times | | 7-8 times | | 9-10 times | | 10-11 times | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Freq. | % | Freq. | % | Freq. | % | Freq. | % | Freq. | % | Freq. | % | Freq. | % |
| 1 | 3 | 1.4 | 5 | 2.5 | 3 | 1.4 | - | - | 11 | 5.2 | 3 | 1.4 | 24 | 11.9 |
| 2 | 4 | 1.9 | - | - | 3 | 1.4 | - | - | 12 | 5.7 | 5 | 1.9 | 23 | 10.9 |
| 3 | 5 | 2.4 | - | - | 3 | 1.4 | 3 | 1.4 | 10 | 4.8 | 5 | 2.5 | 26 | 12.5 |
| 4 | - | - | 3 | 1.4 | - | - | 3 | 1.4 | 14 | 6.7 | 4 | 1.9 | 24 | 11.4 |
| 5 | 6 | 2.9 | - | - | 3 | 1.4 | - | - | 10 | 4.8 | 4 | 1.9 | 23 | 11 |
| 6 | - | - | 4 | 1.9 | - | - | 6 | 2.9 | 16 | 7.4 | - | - | 26 | 12.2 |
| 7 | - | - | - | - | 4 | 2.0 | - | - | 10 | 4.8 | - | - | 14 | 6.8 |
| 8 | - | - | 3 | 1.4 | - | - | - | - | 11 | 5.2 | 4 | 1.9 | 18 | 8.5 |
| 9 | - | - | 3 | 1.4 | 3 | 1.4 | - | - | 10 | 4.9 | 3 | 1.4 | 19 | 9.1 |
| 10 | - | - | 3 | 1.4 | - | - | | | 9 | 4.3 | - | - | 12 | 5.7 |
| Total | 18 | 8.6 | 21 | 10 | 19 | 9 | 12 | 5.7 | 113 | 53.8 | 27 | 12.9 | 210 | 100 |

***Source:*** Survey, 2010

**Table 8:** Trip Purpose

| Coaches | Visitation | | Employers' business | | Shopping | | Leisure | | Private business | | others | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Freq. | % | Freq. | % | Freq. | % | Freq. | % | Freq. | % | Freq. | % | Freq. | % |
| 1 | 3 | 1.4 | 7 | 3.3 | 4 | 1.9 | 3 | 1.4 | 5 | 2.4 | 4 | 2.0 | 26 | 12.4 |
| 2 | 4 | 1.9 | 8 | 3.8 | 3 | 1.4 | 3 | 1.4 | 5 | 2.4 | 3 | 1.4 | 26 | 12.3 |
| 3 | 3 | 1.4 | 12 | 5.6 | 4 | 1.9 | 5 | 2.5 | 5 | 2.4 | 3 | 1.4 | 32 | 15.2 |
| 4 | 3 | 1.4 | 8 | 3.8 | 3 | 1.4 | 3 | 1.4 | 5 | 2.4 | - | - | 22 | 10.4 |
| 5 | 3 | 1.4 | 7 | 3.3 | - | - | - | - | 5 | 2.4 | - | - | 15 | 7.1 |
| 6 | 3 | 1.4 | 6 | 2.9 | 3 | 1.4 | - | - | 5 | 2.4 | - | - | 17 | 8.1 |
| 7 | 7 | 3.5 | 6 | 2.9 | - | - | - | - | 7 | 3.2 | - | - | 20 | 9.6 |
| 8 | - | - | 6 | 2.9 | 5 | 2.5 | - | - | 3 | 1.4 | - | - | 14 | 6.8 |
| 9 | 3 | 1.4 | 9 | 4.3 | 3 | 1.4 | - | - | 5 | 2.4 | - | - | 20 | 9.5 |
| 10 | 4 | 1.9 | 6 | 2.9 | 3 | 1.4 | - | - | 5 | 2.4 | - | - | 18 | 8.6 |
| Total | 33 | 15.7 | 75 | 35.7 | 28 | 13.3 | 14 | 6.7 | 50 | 23.8 | 10 | 4.8 | 210 | 100 |

***Source:*** Survey, 2010

**Table 9:** Trip Cost Rating

| Coaches | Very good | | Good | | Adequate | | Poor | | Very poor | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Freq. | % | Freq. | % | Freq. | % | Freq. | % | Freq. | % | Freq. | % |
| 1 | 4 | 1.9 | 7 | 3.3 | 6 | 2.8 | 3 | 1.4 | 4 | 1.9 | 24 | 11.3 |
| 2 | 6 | 2.8 | 7 | 3.3 | 7 | 3.3 | 3 | 1.4 | 5 | 2.4 | 28 | 13.2 |
| 3 | 4 | 1.9 | 7 | 3.3 | 7 | 3.3 | 6 | 2.9 | - | - | 24 | 11.4 |
| 4 | 4 | 1.9 | 8 | 3.8 | 6 | 2.8 | 3 | 1.4 | - | - | 21 | 9.9 |
| 5 | 5 | 2.4 | 7 | 3.3 | 5 | 2.4 | - | - | - | - | 17 | 8.1 |
| 6 | 5 | 2.4 | 8 | 3.8 | 6 | 2.8 | - | - | - | - | 19 | 9 |
| 7 | 6 | 2.8 | 7 | 3.3 | 8 | 3.8 | - | - | - | - | 21 | 9.9 |
| 8 | 6 | 2.8 | 11 | 5.5 | 6 | 2.8 | - | - | - | - | 23 | 11.1 |
| 9 | 8 | 4.0 | 8 | 3.8 | 6 | 2.8 | - | - | - | - | 22 | 10.6 |
| 10 | - | - | 7 | 3.3 | 4 | 1.9 | - | - | - | - | 11 | 5.2 |
| Total | 48 | 22.9 | 77 | 36.7 | 61 | 29 | 15 | 7.1 | 9 | 4.3 | 210 | 100 |

***Source:*** Survey, 2010

**Table 10:** Trip's distance

| Coaches | 0-7km | | 8-14km | | 15-21km | | 22-28km | | 29-35km | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | Freq. | % | Freq. | % | Freq. | % | Freq. | % | Freq. | % |
| 1 | 5 | 2.4 | 3 | 1.4 | 4 | 1.9 | 5 | 2.5 | 6 | 2.8 | 23 | 11 |
| 2 | 4 | 1.9 | 3 | 1.4 | 6 | 2.8 | 6 | 2.8 | 6 | 2.8 | 25 | 11.7 |
| 3 | 4 | 1.9 | 3 | 1.4 | 5 | 2.4 | 5 | 2.5 | 6 | 2.8 | 23 | 11 |
| 4 | 3 | 1.4 | 5 | 2.5 | 5 | 2.4 | 6 | 2.8 | 4 | 1.9 | 23 | 11 |
| 5 | - | - | 3 | 1.4 | 5 | 2.4 | 6 | 2.8 | 4 | 1.9 | 18 | 8.5 |
| 6 | - | - | 4 | 1.9 | 4 | 1.9 | 6 | 2.8 | 8 | 3.8 | 22 | 10.4 |
| 7 | - | - | 4 | 1.9 | 4 | 1.9 | 5 | 2.5 | 6 | 2.8 | 19 | 9.1 |
| 8 | - | - | 3 | 1.4 | 4 | 1.9 | 6 | 2.8 | 6 | 2.8 | 19 | 8.9 |
| 9 | - | - | 3 | 1.4 | 4 | 1.9 | 5 | 2.5 | 6 | 2.8 | 18 | 2.6 |
| 10 | - | - | 3 | 1.4 | 4 | 1.9 | 5 | 2.5 | 6 | 2.8 | 18 | 8.6 |
| Total | 16 | 7.6 | 34 | 16.2 | 45 | 21.4 | 55 | 26.2 | 60 | 28.6 | 210 | 100 |

***Source:*** Survey, 2010

**Table 11:** Trip's Time

| Coaches | <30 minutes | | 30-60 minutes | | 61-90 minutes | | 91-120 minutes | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Freq. | % | Freq. | % | Freq. | % | Freq. | % | Freq. | % |
| 1 | 5 | 2.4 | 3 | 2.4 | 7 | 3.3 | 8 | 4.0 | 23 | 11.1 |
| 2 | 3 | 1.4 | 6 | 2.9 | 7 | 3.3 | 8 | 4.0 | 24 | 11.6 |
| 3 | 4 | 1.9 | 3 | 1.4 | 8 | 4 | 8 | 4.0 | 23 | 11.3 |
| 4 | 6 | 2.9 | 3 | 1.4 | 10 | 4.6 | 13 | 6.0 | 32 | 14.9 |
| 5 | - | - | 3 | 1.4 | 7 | 3.3 | 9 | 4.3 | 19 | 9 |
| 6 | - | - | 3 | 1.4 | 6 | 2.9 | 8 | 4.0 | 17 | 8.3 |
| 7 | - | - | 3 | 1.4 | 6 | 2.9 | 8 | 4.0 | 17 | 8.3 |
| 8 | - | - | 3 | 1.4 | 8 | 3.8 | 9 | 4.3 | 20 | 9.5 |
| 9 | - | - | 3 | 1.4 | 8 | 3.8 | 8 | 4.0 | 19 | 9.2 |
| 10 | - | - | - | - | 7 | 3.3 | 7 | 3.3 | 14 | 6.6 |
| Total | 18 | 8.6 | 30 | 14.3 | 74 | 35.2 | 88 | 41.9 | 210 | 100 |

***Source:*** Survey, 2010

**Table 12:** Pearson Correlations of Travels Patterns and Socio-Economic characteristics

| | weekly trip frequency | trip's distance | trip's time | age group | marital status | employment status | monthly income level | patrons arrival time |
|---|---|---|---|---|---|---|---|---|
| Weekly trip frequency | 1 | | | | | | | .124 |
| Trip purpose | .035 | | | | | | | -.094 |
| Trip cost rating | .030 | | | | | | | -.027 |
| Trip's distance | .110 | 1 | | | | | | .253(**) |
| Trip's time | -.203(**) | .030 | 1 | | | | | .196(**) |
| Gender | .027 | .055 | .014 | | | | | .100 |
| Age group | -.020 | -.030 | .051 | 1 | | | | -.016 |
| Marital status | -.006 | .007 | .130 | .484(**) | 1 | | | -.027 |
| Education level | .023 | -.033 | -.045 | -.216(**) | -.158(*) | | | -.041 |
| Employment status | -.007 | .069 | .063 | -.262(**) | -.120 | 1 | -.037 | .116 |
| Monthly income level | -.012 | .000 | .088 | .116 | .128 | -.037 | 1 | -.039 |
| Patrons arrival time | .124 | .253(**) | .196(**) | -.016 | -.027 | .116 | -.039 | 1 |

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

**Table 13:** Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .203(a) | .041 | .037 | 1.477 |

a Predictors: (Constant), trip's time

**Table 14:** Coefficients(a)

| Model | | Unstandardized | | Standardized | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | B | Std. Error |
| 1 | (Constant) | 3.246 | .350 | | 9.279 | .000 |
| | trip's time | .323 | .108 | .203 | 2.993 | .003 |

a Dependent Variable: weekly trip frequency

**Table 15:** Excluded Variables(b) - Tolerance

| Model | | Beta In | t | Sig. | Partial Correlation | Collinearity Statistics |
|---|---|---|---|---|---|---|
| 1 | trip purpose | .029(a) | .432 | .666 | .030 | .999 |
| | trip cost rating | .031(a) | .453 | .651 | .031 | 1.000 |
| | trip's distance | .104(a) | 1.540 | .125 | .106 | .999 |
| | gender of respondents | .024(a) | .355 | .723 | .025 | 1.000 |
| | age group of respondents | -.031(a) | -.452 | .652 | -.031 | .997 |
| | marital status of respondents | -.033(a) | -.486 | .627 | -.034 | .983 |
| | education level of respondents | .032(a) | .471 | .638 | .033 | .998 |
| | employment status of respondents | -.019(a) | -.283 | .778 | -.020 | .996 |
| | monthly income level of respondents | -.030(a) | -.438 | .662 | -.030 | .992 |

a Predictors in the Model: (Constant), trip's time

b Dependent Variable: weekly trip frequency

## CONCLUSION AND RECOMMENDATIONS

This study sought to investigate the relationship that exists between the socio-economic characteristcs and travel demands of rail passengers in Lagos metropolis. It was revealed that the gender of the passengers showed that, 56.2% were male and 43.8% were female, whose average income was N42, 500 and age was 38 years old. Travel purpose showed that, 69.5% of the patrons travelled for employers' and private businesses. On the frequency of travels, 53.8% of the train patrons made between 9 and 10 trips per week. The maximum trip distance was 35 kilometers and 54.8% of the train patrons' traveled between 22 and 35 kilometers per day. The cost of these travels range between N150 and N300. Besides, 77.1% of the patrons spent between 60 and 120 minutes in a trip made in Lagos metropolis. The correlation analysis revealed a negative relationship between the travel demands (trip frequency) and passengers' travel time, while revealed a positive relationship between marital status and age of passengers.

Based on these findings, the study recommends that, the train should be made attractive, convenient and safe to accommodate prospective patrons, particularly those who otherwise would not frequently patronise the mode (that is, the high income earners, women and the aged). The trip cost should be subsidised so as to increase the trip frequency. The trip time of train patrons should be reviewed through a good policy statement in order to improve the arrival time of train. Based on the inferential findings, the trip time will need to be improved upon by the introduction of the standard gauge for the use of the train. This will equally enhance the trip purpose, distance and the socio-economic variables as identified before now.

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