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RESEARCH MONOGRAPH

URBAN PASSENGER TRANSPORT IN LAGOS (NIGERIA)

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A. A. Alawode

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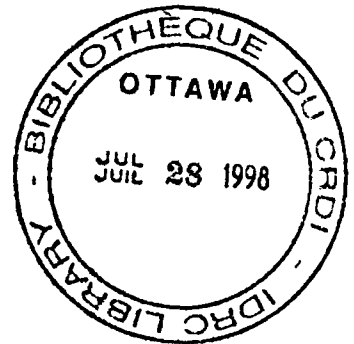
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ABSTRACT

In the five hundred years of its known existence, Lagos has grown both demographically and spatially. The population of the city estimated at 3.85 million in 1985 is projected to double that figure by the year 2,000. The city has been expanding in various directions and now covers an area of about 1,640 square kilometers. Lagos also incorporates a wide variety of land uses: commercial, industrial and residential.

Given the growth pattern of Lagos Metropolis and the dependence of about 80% of passenger trips on public transportation, the provision of efficient public transportation services in the metropolis is of great importance. Yet, this has proved to be an herculean task which has long been an issue of great concern to the people and Government of Lagos State.

About 66% of the transport supply in Lagos Metropolis is by the informal transport modes, which are ill-equipped to render efficient services. Given the importance of the informal transport modes in the supply of transport services in the metropolis, this study seeks to investigate the economics of the sector, its operational characteristics and levels of consumer satisfaction, as a precondition for understanding the role of the informal transport sector within the overall passenger transport system.

The study employs questionnaire approach for both the surveys of commuters and operators utilizing the purposive incidental sampling approach for the former and random sampling technic for the latter.

The research reveals some interesting findings. It shows that cheap transport fare, ready availability, and safety are the most important considerations in commuters' modal choice decision in the study region. Improvement of the services rendered by the informal modes to ensure these quality attributes will enhance the demand for their services as well as improve the level of commuters' satisfaction. The study also shows that, in contrast to loss making which characterized the formal bus transport operation (LSTC), urban informal transport; operation is a profitable business. The study indicates economies of vehicle scale and suggests a minimum optimum vehicle size of 13 passenger seat. In terms of pricing, the study reveals that rate levels are a function of supply and demand, with supply being a function of cost. In practice, costs of fuel, lubricants and spare-parts are the most important cost items. The influence of demand on pricing of urban transport services comes into a sharper focus during peak demand periods, when operators charge what the traffic could bear. Such price levels, often unrelated to the cost of providing the service, is determined by the magnitude of excess demand. In terms of policy, a rail-based mode complemented by modernized informal modes plying short distances, is suggested by the study.

CHAPTER ONE

INTRODUCTION

1.1 The Study Region

In the five hundred years of its known existence, Lagos has grown both demographically and spatially. The physical and the spatial feature of urban development within the Metropolis are direct consequences of the varied economic and political roles that Lagos had played in Nigeria's history.

Lagos has been a city of multiple functions: a nerve-center of the Nation's industrial, commercial and financial activities, the most important seaport, an international airport, a State capital and until recently, the Federal Capital of Nigeria. Lagos is thus the most important urban center in Nigeria.

The population of Lagos grew from 126,000 people in 1931 to 665,000 in 1963 (Caldwell, 1967). The population projection presented in table 1 shows that the population of the city had risen to 3.85 million by 1985 and is projected to double that figure by the year 2000.

Table 1
Population Projection for Metropolitan Lagos

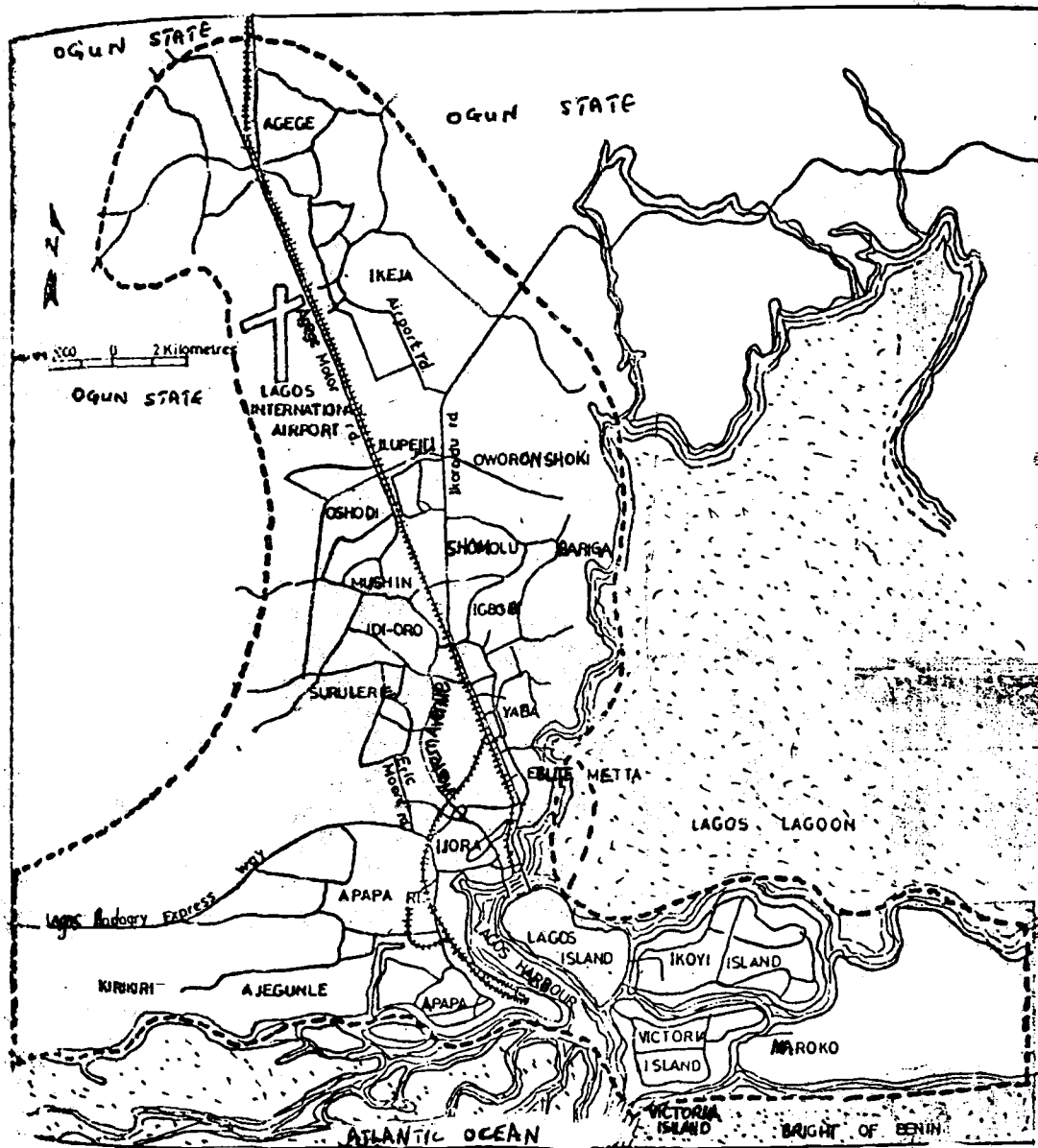
<u>Year</u>	<u>Population (million)</u>
1985	3.85
1986	4.03
1987	4.21
1988	4.40
1989	4.60
1990	4.80
2000	7.47

Source: *Technical Report on Metroline Project, 1984.*

As Lagos grew demographically, it has also grown spatially. Lagos Metropolis covers an area of about 1,640 square kilometers. The city has been growing in the various directions. It has continued growing northwest-ward towards Ogun State boundary at Sango Otta, and in some north eastern area, developments have merged into Ogun State. In the South-West such as Alagbado, developments have continued from Victoria Island to Lekki and beyond, even more so with the recent displacement of the Maroko residents. South-Eastward, developments have continued along the

Badagry road towards Badagry. Developments have only been curtailed southward by the Atlantic ocean. Figure 1 presents the spatial spread of Lagos Metropolitan Area.

Fig. 1 THE STUDY REGION



SOURCE: Based on Lagos Metropolitan Area Transportation Study 1976.

Lagos incorporates a wide variety of land uses: commercial, industrial and residential. The master plan of Lagos Metropolis (1965-2000), indicated the share of the various land uses as follows: Residential (51.2%), Commercial (5.0%), Industrial (8-8%), Institutional (13.2%), Transport and Utility (19.0%), and Recreational and Open Space (2.8%) (Wilbur Smith and Associates; 1978). In the midst of all these developments, new Central Business Districts (CBDs) have emerged in different parts of the metropolis also serving as magnets to waves of workers daily during the morning and afternoon peak periods.

The commercial and industrial centers provide major employment and they are the sources of many goods and services. These activity areas strongly influence the pattern and intensity of movements within the metropolis. Lagos is the focus of much metropolitan activities because of the regional, national and international scope of its functions.

1.2 Demand for Urban Passenger Transport Service

It is estimated that about 80% of the daily passenger trips in Lagos Metropolis is made by public transport (Wilbur Smith and Associates, et al, 1978). Based on the projected population of the Metropolis contained in table 1 above, the demand for public transport services in Lagos Metropolis was estimated at about 3.22 million passengers per day in 1986, 3.84 million passengers per day in 1990, 4.5 million passengers per day in 1993 and projected to rise to 6 million passengers per day by the year 2000.

1.3 Supply of Urban Passenger Transport Service

The vehicle stock and new vehicle registration in Nigeria in general have declined drastically in the recent past as rapidly rising vehicle prices in the era of structural adjustment, made it difficult for Nigerians to purchase a substantial number of new vehicles and the effective maintenance of the existing stock has been inhibited by exorbitant prices of parts.

Except for the minor increase recorded in 1990 due to the injection of imported used vehicles into the Nigerian transport market, the most recent Available vehicle data (Federal Ministry of Transport, 1991) reveal that total vehicle stock consistently declined between 1986 and 1990 (see table 2). The vehicle stock fell from 602,120 in 1986 to 406,027 in 1990 (an average annual decline rate of 8.1%). Over the same period, the total stock of cars declined from 391,378 to 272,960 (an average annual decline rate of 7.6%), while the stock of buses declined from 132,446 to 83,560 (an average annual decline rate of 9.2%).

The decline in the total vehicle stock is attributable to the scrapping of old vehicles and the rapid decline in the number of the newly registered vehicles. Between 1986 and 1989, available data show that a total of 448,492 old vehicles (an annual average of 112,123 or about 23% of the annual vehicle stock) were scrapped. This substantial proportion of wastage contrasts sharply to an insignificant average annual vehicle replenishment rate of 7.3% as revealed by the newly vehicle registration figures. Annual vehicle registration declined from 9.7% of the total vehicle stock in 1986 to 5.0% in 1990. The detailed vehicle situation in the country between 1986 and 1990 is presented in table 2.

Table 2
Motor Vehicle Fleet in Nigeria, 1986-1990

<u>Vehicle Category</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
Car	391378	337465	308137	258585	272960
Bus	132466	126487	102712	81047	83560
Truck	54191	43996	37350	30876	32295
Tractors	6021	5499	4669	3839	4866
Trailers	18063	16498	14006	11578	12346
Total	602120	549946	466875	385948	406027
Annual % Change		-9.0	-15.0	-17.0	5.2
New Registration	58595	28467	31381	29700	20100
Annual % Change		-51.4	10.2	-5.6	-32.3
% of Total Stock	9.7	5.2	6.7	7.6	5.0
Scrapped	110769	111538	112308	113877	n.a
% of Total Stock	18.4	20.0	24.1	29.5	n.a

Note: n.a. = non available

Source: *Federal Ministry of Transport, Lagos: Digest of Transport Statistics, 3rd. Edition 1990.*

The break down of vehicle data by state during this period is not available. However, past estimates reveal that about 40% of the annual total national vehicle registration is recorded in Lagos State. Using this ratio, it is estimated that new vehicle registration declined in Lagos State from 23,438 in 1986 to 8040 in 1990, compared with a figure of 72,000 recorded in 1982. The situation since 1986 has therefore been very worrisome and has complicated the mobility problem in the state. The mobility problem in Lagos metropolis has in particular assumed a crisis dimension as a large

number of commuters are seen daily in the bus stops waiting for a long time during peak periods, struggling to board any available vehicle irrespective of the quality of service it could offer.

Both privately-owned (informal) and publicly-owned (formal) transport modes for hire and reward, supply urban passenger transport services in Lagos Metropolis. Several private entrepreneurs engage in the transportation business using informal transport modes such as adapted buses (*Bolekaja* and *Molue*), mini buses, 911 buses, and cars operated as taxis, car hire services and *Kabukabu* (privately owned cars but illegally operated for hire and reward).

The publicly-owned (formal) modes providing urban passenger transport services in Lagos Metropolis include the Lagos State Transport Corporation (LSTC) operating municipal bus service, The Lagos State Ferry Transport Service, and Nigerian Railway Corporation (NRC) urban mass transit service. The LSTC was the most important municipal bus service in the Metropolis, until November 1994 when it was scrapped; when its operable bus fleet declined to only 4 buses (see chapter 5 for full discussion on the LSTC). Within the last five years however, Local Governments Councils in Lagos Metropolis also started operating municipal public transport services. Similarly, the People's Bank of Nigeria commenced the operation of the people's bus service. The State Ferry Transport Service plays an important role of transporting passengers via the Lagos lagoon. The Company has within the past five years, acquired six new ferries to augment its old fleet. The Nigerian Railway Corporation (NRC) also operates the urban rail mass transit service, through its light rail system. The three major routes that have been of tremendous benefit to commuters are the Iddo-Alagbado, Agege-Iddo, and Alagbado-Apapa routes.

1.4 Statement of Research Problem

As the demand and supply situation discussed above reveals, transport demand in Lagos Metropolis has been rapidly growing in the face of drastically declining vehicle supply. The growth pattern and variety of land uses in the Metropolis have also complicated transport demand situation in the Metropolis. The combination of the above factors has resulted in an urban transportation setting that is herculean in nature. Public transportation services within the Metropolis has also been inefficient. Thus, inadequate and inefficient transport situation are issues of major concern in Lagos Metropolis.

The break down of the estimated modal split of daily passenger trips in the metropolis (see Wilbur Smith & Associates, 1978; UNIFECS, 1987) shows that the informal bus transport mode accounts for 51%, taxi/car hire/*Kabukabu* (15%), formal bus transport (13%), ferry and railway (1%), while the remaining 20 percent is accounted for by private cars, cycling and walking. Thus, the informal transport modes

(buses and cars) account for 66% of transport supply in the Metropolis. Given the importance of the informal modes in the total transport supply in the Metropolis, this study seeks to investigate the economics of the sector, its operational characteristics and levels of consumer satisfaction, as a precondition for understanding the role of the informal transport sector within the overall passenger transport system.

1.5 Research Objectives

The objectives of this research are to:

- (1) study the institutional structure of the informal urban public transport system in Lagos Metropolis;
- (2) analyze the economics of the informal public transport system in the city;
- (3) investigate commuters' assessment of the quality of service of urban public transport modes, the problems faced by commuters and their perception of the solutions required; and
- (4) evaluate government policies towards the informal transport modes.

1.6 Research Methodology

In order to achieve these objectives the following methodology was utilized in undertaking the study:

- (i) Literature review on informal urban passenger transport in developing countries;
- (ii) Survey of commuters;
- (iii) Survey of the informal transport modes and analysis of their institutional structure;
- (iv) Case study of a formal transport system, the LSTC, for the purpose of comparison with the informal modes;
- (v) Review of government's policy and programmes towards urban passenger transport in Nigeria.

The surveys of commuters and operators were undertaken in August/September 1991 and May 1993 respectively, utilizing the questionnaire approach. The specific data

gathering technic adopted for each survey are discussed in chapters 3 and 4.

1.7 Outline of Study

This work is organized into seven chapters. Following this introduction, chapter two reviews the literature on informal urban passenger transport in developing countries. Chapters three and four present the findings of the surveys of commuters and the informal transport operators. In chapter five, we report a case study of the formal passenger bus transport, the Lagos State Transport Corporation (LSTC) which was still in operation as at the time of our study. Chapter six presents the policy aspect of the study, while chapter seven contains the conclusion.

*CHAPTER TWO***REVIEW OF LITERATURE ON URBAN INFORMAL PASSENGER TRANSPORT IN DEVELOPING COUNTRIES**

Over the last twenty years, several theories have been developed in an attempt to define the informal sector. These theories propose sometimes widely diverging explanations of its origins, present state and future. The theories show that the informal sector operates in complex ways and covers wide range of activities. According to the transition theory (Pemouil, 1983), the informal sector functions as a relay between the traditional and the modern societies. Seen in the light of a dynamic evolution, the informal sector is thus the meeting point of the traditional and modern spheres of the economy. The informal sector brings together economic rationalities, patterns of social behaviour, value systems and production modes taken from the two sectors: the traditional and the modern (Duquesne and Musyck, 1990).

In the transport sector, informal modes exist both for freight and passenger transportation. They are also referred to as paratransit modes. In some cases, some modes carry both passengers and goods. Informal modes in the urban passenger transport market can be defined as low occupancy vehicles like taxis, mini buses, van pool, dial and ride, usually with passenger carrying capacity between 5 and 40 people. They are privately owned but are registered as commercial vehicles for hire or reward. In addition to the payment of vehicle registration and licensing fees, the operators also usually pay the appropriate fee for hackney permit. The operation of informal transport vehicles for hire or reward differentiates them from "private vehicles", which are registered for use only for the purpose of their owners' private businesses and not permitted to operate commercial services. On the other hand, formal transport modes are owned by the Government and operated by government agencies for hire or reward. They are usually mass transit systems including tramway, underground metro system, omni bus, train and ferry.

In most countries, the informal transport modes predominate and they supply the bulk of the transport services in the urban centres. In Buenos Aires, a form of informal passenger transport, locally called collective microbus, accounts for between 54% and 75% of public transport trips (Ruth, 1984). Informal transport modes such as Duto, Pericab, bicycle, lorries and hand cast which are often heavily laden with goods and passengers are common in Madras Caracas and Delhi (Parker, 1979). The importance of paratransit modes in Bombay, Calcutta, Dares-Salam, Jakarta, Karachi and Kuala-Lumpur is also well documented (Plumbe, 1979). For example, in Calcutta and Dar-es-Salaam, more than 50% of trips made are in paratransit modes, while the figure for Bombay is 48%.

The report of an important study of the urban transport system in Asia, compiled by Romeo B. Ocampo (1982), presents the results of five studies of low-cost transport (LCT) system in selected cities in Indonesia, the Philippines, Thailand and Turkey. The studies, based mainly on sample surveys, were undertaken by research teams in the Universities in the various countries, with the finance and technical assistance from the International Development Research Center (IDRC).

A crucial policy issue that motivated the research project was whether LCT modes ought to be banned or phased out in favour of former transport modes which the government considered as more efficient and modern forms of urban transport in the rapidly growing cities; of Asia; or whether they should be retained and integrated into the urban transport systems that the Asian cities were proposing to modernize. The findings of the studies showed that, on balance, the LCT modes were socially beneficial because they were playing an important role in the urban passenger transportation market of the rapidly growing cities of Asia. The study therefore recommended that the LCT modes should be retained but with some modifications in their vehicles, organization and operation in order to improve their quality of service.

A number of useful studies have also been conducted on the *Matatu*, an informal mode of public transport in Nairobi, Kenya. The *Matatus* are small motor vehicles, usually minibuses or converted pick-ups, plying for hire along lucrative bus routes. The name *Matatu* was derived from the Kikuyu words *mangotole ihatu* meaning three ten cent pieces, the fare charged in the 1950s by this mode of transport when it commenced operation. The *Matatus* were owned and operated as if they were private vehicles. They were therefore inadequately insured for carrying passengers and were also usually overloaded and poorly maintained. In the absence of any law specifically governing them, the *Matatus* tended to operate in an uncontrolled manner. They were illegal, until the presidential decree of 1973 categorized them as public service vehicles and permitted them to operate legally. They were however exempted from Transport Licence Board requirements.

The first study on the *Matatus* was carried out for the Nairobi City Council (NCC) in 1977. It identified the origins and destinations of *Matatus*, their average daily number, the ridership, type and condition of vehicles, and the fare structure. It recommended that *Matatus* should organize themselves in associations. It also made recommendations on insurance, licensing, vehicle inspection, taxation and terminals.

The Mazingira Institute, Nairobi Kenya, also completed a piece of primary research on the *Matatu* mode of public transport in 1982. The major issues identified by the study included licensing, insurance, vehicle design, credit finance, routes, terminals, and the proposed change to diesel. The study consisted of several surveys carried out by the Institute, both independently and in collaboration with the Nairobi City Council.

A user's survey was carried out on a sample of 352 heads of households in 24 locations in Nairobi, stratified by income group. Also, an operators' survey was carried out on a random sample of vehicles using 29 terminals in Nairobi City center. A total of 38 owner-drivers, 27 employed drivers, and 99 conductors were interviewed. Case studies were also made of 5 *Matatu* owners, 3 terminals, and 1 *Matatu* association. An informal survey of car dealers, tyre dealers, body conversion workshops, credit finance institutions, insurance companies, and registry of motor vehicles was also carried out to collect contextual information, particularly on the economics of operating *Matatus*.

Some of the recommendations of this study were taken up in the subsequent legislation: The Traffic (Amendment) Act of 1984, commonly called the "*Matatu* Act". The main provisions of the Act were the requirements for public service vehicle licensing, police supervised annual inspection, passenger insurance coverage for a maximum of 25 passengers, minimum driver's age of 24 years, and minimum period of holding a driver's license of four years. A *Matatu* was defined in the Act as "a public service vehicle having a sitting accommodation for not more than 25 passengers excluding the driver, but which does not include a motor car". Since the act became law in November 1984, enforcement of the licensing requirement has been strict. However, this legislation notwithstanding, the study shows that the City Council did not make specific provision for *Matatus* in its physical planning.

A follow-up study to that of 1982 reported by Lee-Smith (1991) focused on urban growth and reform. The study which was also financed by the IDRC, was part of a larger study on the African urban management. This study relied on both primary and secondary data. The main source of secondary data was the 1982 *Matatu* study by the Mazingira Institute while primary data were collected through structured interviews with relevant authorities and interest groups. At the workshop in which the results of the study was presented in July 1985, the following issues related to *Matatu* operations were discussed: associations and terminals, credit finance, vehicle and passenger insurance, and commuter safety. All the interest groups directly involved in these issues attended the workshop. High insurance premiums which reduced the profit margins of the *Matatus* was the major complaint of the operators at the workshop, while the representatives of the insurance firms criticized the bad claim records of the *Matatus*. They argued that premiums could not be reduced unless claims records improve. A Commission of Inquiry on insurance rates was set up on late 1986 following this workshop, and the Mazingira *Matatu* Report was extensively used in evidence before the Commission.

In Nigeria, a number of studies have been conducted on the informal transport modes. One pioneering work in this regard was by Hawkins (1958). His book published in 1958 was based on a survey conducted in the old Western Region of Nigeria in 1954. The book contains useful information on the nature of the road transport industry,

the pattern of commercial road traffic, cost pattern, ownership structure, trade unionism, rates and charges.

A similar study was conducted by Adeyemo (1971) on the taxi cab trade in Ibadan. It focused on the operational characteristics and economics of the taxi cab business in the city. A number of studies by Adeniji (1981, 1983 (a), 1983 (b), 1983 (c) 1985) focused on urban transport systems in Nigeria. The studies examined urban travel characteristics, the municipal bus service, as well as the role of paratransit modes in urban transportation in Nigeria. A more recent study conducted for the International Labour Organization by UNIFECS (1987), focused on social and labour factors that affect the efficiency of public transport. The Lagos case study, was one of the seven case studies of a larger ILO's sponsored study focusing on African cities. The Nigerian case study revealed that some 80 percent of commuters in Lagos Metropolis were moved by public transport with the informal bus transport and other paratransit modes predominating.

*CHAPTER THREE***SURVEY OF COMMUTERS****3.1 Survey Methodology**

The survey of commuters aimed at throwing light on the socio-economic characteristics of commuters in the study region, their transport and trip characteristics, their assessment of the quality of service of transport modes, the problems confronting them and their perception of the solutions required.

A total of 2000 questionnaires were administered using 20 enumerators for two months in August and September 1993. The survey covered 18 zones in Lagos Metropolitan Area namely, Yaba, Oshodi, Ojota, Marina, Ikeja, Badagry Road mile 2, Agege, Ipaja, Barracks, Ojuelegba, Stadium, Ketu, Isolo, Apapa, Oyingbo, Bariga, Apogbon and Obalende.

Twenty enumerators were employed to carry out the survey for two months in August and September 1991. The survey combined Area Sampling Technique with Purposive Incidental Sampling Procedure. In this approach, passengers were identified and interviewed at the bus stops which served as the sampling frame. The enumerators approached all the passengers they met at each bus stop. However, since some of the passengers declined to be interviewed, only those who consented were interviewed and therefore included in the sample. In this situation where the list of the total passenger population is unknown or cannot be pre-determined, the establishment of a systematic sample frame and the application of a random sampling technique are difficult to apply. The Purpose Incidental Sampling technique applied in this study, is therefore a second-best approach which is quite valid in the circumstance. However, the approach has its limitations, such as the possibility of the generation of a sample that may not necessarily be representative of the entire population and statistical estimates which may be biased and less accurate compared with the random sampling technique. However, such limitations are minimized in this case since there was no discrimination against any passenger met at the bus stops since all of them had equal chances of being included.

Out of the 2000 questionnaires administered, it was discovered during analysis stage that 1934 (or 96.7%) were analyzable. Simple analytical techniques such as relative frequency and cross tabulation were employed. The analyses are in five main areas namely, socio-economic profile of commuters, transport characteristics of commuters, trip characteristics of commuters, commuters' evaluation of quality of service of transport modes, and the problems encountered by commuters together with the solutions perceived by them.

3.2 Survey Findings

3.2.1 *Socio-Economic Profile of Commuters*

The socio-economic characteristics of commuters are analyzed in terms of their gender, age structure, educational background, occupational categories, income level and the proportion of monthly income spent on transport.

3.2.1.1 *Gender Characteristics*

The gender break down or sex characteristics of respondents shows that 62.2% were male while 37.8% were female. This should however not be interpreted to imply that there are more male than females commuters in the study region. It simply reveals that more male than female commuters responded to our questionnaire.

3.2.1.2 *Age Structure*

Analysis of the age structure of commuters in our sample shows that 11.22 were less than 15 years. 46.1% were 16-30 years. 30.4% were 31-45 years. 10.2% were 46-60. while 21% were over 60 years (see table 3). This reveals that 86.7% of the respondents were within the working age group of 15-60 years, and possibly explains the predominance of work trips in our analysis (see section 3.2.3.5).

TABLE 3
AGE DISTRIBUTION OF PUBLIC TRANSPORT
PASSENGERS IN LAGOS METROPOLIS

<u>Age Group</u>	<u>Relative Frequency (%)</u>
Less than 15 years	11.2
16 - 30 years	46.1
31 - 45 years	30.4
46 - 60 years	10.2
Over 60 years	2.1
<u>Total</u>	<u>100.0</u>

Source: Field Survey, 1991.

3.2.1.3 *Educational Background*

The analysis of educational background of commuters presented in table 4, shows that more than 80% have secondary and post-secondary education.

TABLE 4
EDUCATION LEVEL OF PUBLIC TRANSPORT
PASSENGERS IN LAGOS METROPOLIS

<u>Education Level</u>	<u>Relative Frequency (%)</u>
No Formal Education	10.5
Primary School	8.8
Secondary School	33.6
Post Secondary	47.1
<u>Total</u>	<u>100.0</u>

Source: *Field Survey, 1991.*

3.2.1.4 *Occupational Category*

Diasaggregating the respondents into their occupational categories indicates that students, the self-employed and civil servants predominated. Table 5 reveals that about 8% of the respondents were unemployed, which perhaps suggests a low accessibility of the unemployed to public transport due to inability to pay.

TABLE 5
OCCUPATIONAL DISTRIBUTION OF PUBLIC TRANSPORT
PASSENGERS IN LAGOS METROPOLITAN AREA

<u>Category of Occupation</u>	<u>Relative Frequency (%)</u>
Company Employee	21.6
Civil Servant	19.0
Teaching	6.3
Student	26.0
Self Employees	22.4
Unemployed	4.7
<u>Total</u>	<u>100.0</u>

Source: *Field Survey, 1991.*

3.2.1.5 *Income Level of Commuters and Proportion of Income spent on Transport*

The analysis of income level of commuters reveals that 43.7% earned up to ₦600 per month, 23.3% earned ₦601 - ₦900, 16.5% earned ₦901 - ₦1,200, 7.7% earned ₦1,201 - ₦1,500 while only 8.9% earned over ₦1,500 (see table 6). In the past, especially during the oil boom, employees earning at least ₦600 per month would normally own private transport means since real income in terms of consumers' purchasing power was very high and the car advance system was then well in place. Costs of vehicles were then within the reach of this group of workers.

Since the inception of the Structural Adjustment Programme (SAP) in Nigeria in June 1986, inflation has sky-rocketed. The inflation rate which was 14% in 1986 rose to 50% by 1989 and 70% in 1994, thereby greatly eroding real income of consumers. Thus, Nigeria's real per capita income declined more than threefold from over US\$1,000 in the early 1980s to about US\$300 by the early 1990s. The current economic situation has thus turned many marginal car owners into public transport riders. The emerging trend is that more people, regardless of their income level, now depend on public transport services for mobility as car ownership increasingly becomes out of reach of even the top public officers. This has led to a rapidly expanding demand for public transport services.

TABLE 6
INCOME LEVEL OF COMMUTERS

<u>Income Level</u>	<u>Relative Frequency (%)</u>
Up to ₦600	43.7
₦601 - ₦900	23.2
₦901 - ₦1200	16.5
₦1201 - ₦1500	7.7
Over ₦1500	8.9
<u>Total</u>	<u>100.0</u>

Source: *Field Survey, 1991.*

TABLE 7
PROPORTION OF INCOME OF COMMUTERS SPENT ON TRANSPORT

<u>Proportion of Income</u>	<u>Relative Frequency (%)</u>
Up to 10%	50.9
11 - 20%	24.1
21 - 30%	12.6
31 - 40%	4.7
41 - 50%	3.1
More than 50%	4.6
<u>Total</u>	<u>100.0</u>

Source: *Field Survey, 1991.*

Further analysis reveals that 50.9% of the commuters spent up to 10% of their monthly income on transport, 24.1% spent 11-20%, while the remaining 25.0% spent over 20% of their monthly income on transport (see table 7). Included in this last category are commuters who patronize high-priced modes such as taxis, car hire and *kabukabu*. This finding confirms the high cost of transportation in developing countries often underscored in the literature and has a serious implication for the welfare of commuters in the study region. The proportion of income spent on transport is sufficiently high to put the other essentials of human survival (housing, feeding and clothing) at stake.

3.2.2 Transport Characteristics of Commuters

The transport characteristics of respondents were analyzed in terms of vehicle ownership and public transport patronage.

3.2.2.1. Vehicle Ownership

Analysis of data on vehicle ownership (see table 8) reveals that only 18.5% of the respondents own one form of private transport or the other (motor car, motor cycle or bicycle). Some 14.5% of these own motor cars, 2.5% own motorcycles while 1.7% own bicycles. The remaining 81.5% depended entirely on public transport for their mobility needs.

TABLE 8
VEHICLE OWNERSHIP

<u>Ownership of Transport</u>	<u>Relative Frequency (%)</u>
Yes	18.5
No	81.5
<u>Total</u>	<u>100.0</u>
<u>Type of Vehicle owned</u>	
Bicycle	1.7
Motor cycle	2.5
Motor Vehicle	14.3
No. Vehicle	81.5
<u>Total</u>	<u>100.0</u>

Source: *Field Survey, 1991*

Further investigations reveal that the respondents who own private transport means, also patronize public transport because their vehicles were not in a good condition, and were therefore off the road at the time of the survey. Most of the vehicles had been in that state for more than four months prior to the time of the survey, due to the inability of the owners to effect the necessary repairs as a result of financial constraints.

3.2.2.2 *Public Transport Patronage*

We also investigated the type of public transport mode often patronized by commuters. There are seven popular types of public transport modes in the study region namely, Lagos State Transport Corporation (LSTC) buses, Paratransit buses (*911, Molue, Bolekaja* and *Danfo*), Taxi, *Kabukabu* (private cars illegally converted to taxi), Motor cycle, Train and Ferry. Our analysis shows that 38.4% of the respondents patronized any available means of transport, 16.9% usually patronize LSTC buses, 14.1% patronized taxis, 6.3% patronized *Kabukabu*, 23.0% patronized paratransit buses, 0.2% patronized motor cycle, while 0.5% and 0.6% patronized train and ferry respectively (see table 9). The predominance (about 40%) of commuters who patronize buses (LSTC and paratransit buses) in the sample could be attributed to the lower fares charged by these buses compared with the other road based modes like taxis and *Kabukabu* (see table 16), and also possibly to the fact that our respondents were interviewed at bus stops.

The introduction of *Kabukabu* and motor cycle into the public transport supply system in Lagos Metropolis is a reflection of the region. The *Kabukabu*, which was an illegal public transport, has recently been legalized in Lagos Metropolis and the owners

are now required to register their vehicles as a means of public transportation. The motor cycle, which is a major form of urban passenger transport in Cotonou in the Republic of Benin and in some parts of Nigeria such as Kaduna and Cross Rivers states, is a recent introduction into the urban transport system in Lagos and it is still not widely patronized possibly due to its high risk factor.

The share of train and ferry modes in total public transport modal split is still very low (about 1.0%). It is not surprising however that we did not find many train and ferry users standing at bus stops since these modes of transport are at the moment limited to a few areas of the metropolis and they follow specific routes. The poor quality of service of the train mode (see table 16 below) has also not made it a preferred mode by many Lagos commuters. It is important to note however, that the potentials of these two modes as a means of urban mass transportation within the Lagos urban transport system are yet to be fully explored.

TABLE 9
PUBLIC TRANSPORT PATRONAGE

<u>Type of Public Transport</u>	<u>Relative Frequency (%)</u>
Any Available Vehicle	38.4
LSTC	16.9
Taxi	14.1
<i>Kabukabu</i>	6.3
Paratransit buses	23.0
Motor Cycle	0.2
Train	0.5
Ferry	0.6
<u>Total</u>	<u>100.0</u>

Source: *Field Survey, 1991.*

3.2.3 *Trips Characteristics of Commuters*

The major trip characteristics investigated are trip purpose, distance travelled, travel time and waiting time. These trip characteristics determine the demand for transport in a particular setting.

3.2.3.1 *Trip Purpose*

Each trip has two trip ends namely, origin and destination. While the origin of most trips is usually the home, destinations are diverse, depending on trip purpose. The

TABLE 13
TRAVEL TIME AT PEAK PERIOD OF TRAFFIC

<u>Travel Time</u>	<u>Relative Frequency (%)</u>
Less than 10 minutes	13.3
11 - 20 mins.	5.3
21 - 30 mins.	6.7
31 - 40 mins.	3.8
41 - 50 mins.	7.1
51 - 60 mins.	22.5
More than 60 mins.	61.3
<u>Total</u>	<u>100.0</u>

Source: *Field Survey, 1991*

3.2.3.4 *Waiting Time*

Apart from time losses due to traffic congestion, commuters also usually experience time losses as a result of long waiting time before they could get vehicle to board. The analysis in table 14, reveals that 44.4% of the respondents often waited for up to 15 minutes, 28.0% for 16 - 30 minutes, 13.9% for 31 - 45 minutes while the remaining 13.6% often waited for over 46 minutes before getting a vehicle to board. Such excessive waiting time is worrisome since it further reduces time available for productive activities.

TABLE 14
WAITING TIME FOR PUBLIC TRANSPORT

<u>Waiting Time</u>	<u>Relative Frequency (%)</u>
Up to 15 minutes	44.4
16 - 30 minutes	28.0
31 - 45 minutes	13.9
46 - 60 minutes	6.3
Over 60 minutes	7.3
<u>Total</u>	<u>100.0</u>

Source: *Field Survey, 1991*

3.2.4 Commuters Evaluation of Quality of Service of Transport Modes

Passengers were asked to indicate the most important factor in their modal choice decision. The predetermined factors in terms of quality of service attributes, are cheap transport fare, ready availability, safety, comfort and reliability. Reliability implies the certainty that a mode will take its passengers to their destination without breaking down on the way. The ranking in terms of relative frequency of responses is as follows: cheap transport fare (34%), ready availability (26.5%), safety (23.7%), comfort (10.7%), and reliability (5.1%) (see table 15). The analysis thus reveals that cheap transport fare, ready availability and safety are the most important quality of service attributes treasured by the majority of the commuters. The ability of a mode to combine these important attributes will enhance its patronage by commuters. On the other hand, comfort and reliability appear to be luxuries which are currently insignificant determinants of commuters' modal choice decision. This however should not be interpreted to mean that these attributes are not important. Rather, it is the result of the current transport situation in Lagos, which forces commuters to accept just any mode that come their way, given the acute shortage of transport facilities.

TABLE 15
COMMUTERS' EVALUATION OF QUALITY OF SERVICE ATTRIBUTES

<u>Determinant Factors</u>	<u>Relative Frequency (%)</u>	<u>Ranking</u>
Cheap Transport Fare	34.0	1
Readily Available	26.5	2
Reliability	5.1	5
Safety	23.7	3
Comfort	10.7	4
<u>Table</u>	<u>100.0</u>	

Note: 1 implies most important; 5 implies least important.

Source: *Field Survey, 1991*

The importance of transport fare in commuters' modal choice decision, revealed by our analysis, is rather interesting and appear unconventional. It is widely postulated in the literature that transport fare consideration is an insignificant determinant of commuters' modal choice. Its importance in our analysis can be attributed to two principal factors. The first is the rapidly rising transport fare in Nigeria since the adoption of the Structural Adjustment Programme due to high vehicle operating and maintenance costs vis-a-vis low income levels. The second is our earlier finding that cost of transport constitutes a significant proportion of commuters' monthly income. In the light of the competing demands of other essentials of life, commuters cannot but critically monitor their monthly transport budget.

Passengers were also requested to rank individual modes: LSTC buses, taxi, *kabukabu*, paratransit buses, motorcycle, train and ferry, in terms of the five desirable quality of service attributes. The analysis of their response is presented in table 16.

TABLE 16
COMMUTERS' EVALUATION OF QUALITY OF SERVICE OF
INDIVIDUAL MODES

<u>Mode</u>	<u>Cheap Transport Ready</u>		<u>Reliability</u>	<u>Safety</u>	<u>Comfort</u>
	<u>Fare</u>	<u>Availability</u>			
LSTC	3	4	2	1	2
Taxi	7	2	1	2	1
<i>Kabukabu</i>	6	3	5	5	5
Paratransit buses	4	'	4	6	5
Motorcycle	5	5	6	7	7
Train	1	7	4	3	4
Ferry	2	6	3	4	3

Note: 1 = highest ranking; 7 = lowest ranking.

Source: *Field Survey 1991.*

3.2.4.1 *LSTC Buses*

The LSTC buses were ranked highest (1) in terms of safety, 2 in terms of reliability and comfort, 3 in terms of cheap transport fare and 4 in terms of ready availability. As the analysis in chapter six shows, at the time of our fieldwork, the availability rate of LSTC buses was declining over time due to maintenance problem.

This factor robbed commuters of the benefits that they could potentially have derived from this mode of transport. The low transport fare of LSTC buses relative to that of the paratransit buses can be explained by the fact that the Government was using the fares of the publicly owned mode to moderate the price of transport on welfare grounds. By subsidizing the publicly owned mode, the Government attempts to force down prices in the private sector, thus reducing entry, protecting consumers and avoiding wastes.

3.2.4.2 *Taxi*

The taxi mode received the highest ranking (1) in terms of reliability and comfort and high ranking (2) in terms of safety and ready availability, but the lowest ranking (7) in terms of cheap transport fare, the taxi being a high-priced mode that could only be afforded by the relatively rich or people under severe time pressure.

3.2.4.3 *Kabukabu*

The *Kabukabu* is an illegally operated car for hire. The commuters' evaluation of this mode: cheap transport (6), reliability (5), safety (5), comfort (5) and ready availability (3), shows that they are less preferred to the taxis, even though they are both cars. The *Kabukabu* is almost as expensive as taxis but less comfortable since *Kabukabu* vehicles are usually old and unroad-worthy. They are illegal in the sense that they are not normally registered with the Licencing Authorities as public transport vehicles, but as private vehicles. The need to make extra income to supplement normal earnings often force private car owners to ply their vehicles for hire as a part-time business.

3.2.4.4 *Paratransit Buses*

The major forms of paratransit buses are adapted vehicles such as *Molue* and *Bolekaja*, 911 Mercedes Benz buses and minibuses locally called *Danfo*. These buses, especially *Danfoss*, usually ply short distances. They are noted for breaking their journeys into short trips as a means of making more revenue.

Commuters' assessment of quality of service of paratransit buses revealed that they were ranked highest (1) in terms of ready availability since they form the bulk public transport vehicles in the study region. They were however poorly ranked in terms of the other attributes such as cheap transport fare (4), reliability (4), safety (6) and comfort (6). These buses are patronized by many commuters because of their ready availability. Improving other quality of service attributes of paratransit modes will further enhance their patronage by commuters and enhance their welfare effect.

3.2.6 *The Proposed Rail Mass Transit System (RMTS) Alternative to the Lagos Metroline*

Based on the perceived need for a rail-based mass transit system in Lagos metropolis, the Nigeria Railway Corporation (NRC) commissioned an in-house study group to work on a prefeasibility study for a revised and modest rail mass transit system. The study was based on the premise that there exists already a rail network for urban transportation in Lagos.

The report of the study however revealed that the railway carried a total of 3.6 million passengers per year or 2,000 passengers per hour during the peak period in 1984. It was projected that, based on improvements to the existing network and supply of requisite train cars, the Rail Mass Transit System (RMTS) would have a carrying capacity for 50 million passengers per year or about 28,000 passengers per hour during the peak period. In order to generate this capacity, the study recommended that the existing track between Iddo and Alagbado should be double-tracked in the short-run, while new double tracks would have to be laid and the necessary sleepers, rolling stock, building and station requirements provided so as to cope with the westward corridor routes in the long-run (Federal Republic of Nigeria, 1987).

Based on a capital requirement of 76.4 million Naira and overhead expenses of 2.0 - 3.0 million Naira per annum, the total working expenses for the first year of the RMTS in 1991 was estimated at 15.6 million Naira compared with an estimate Revenue of 18.5 million Naira (based on a simple fare structure ranging from 30 kobo for 1-10 km, depending on length of travel), thereby yielding a profit of 2.9 million Naira. The RMTS project was expected to earn a cumulative profit of 4.30 million Naira by the year 2000. The study therefore showed that, given prudent financial management coupled with adequate infrastructural facilities, the RMTS would be financially viable (Federal Republic of Nigeria, 1987). The RMTS is however yet to be fully developed to the expected standard (see section 6.1 below).

3.2.7 *Problems Encountered by Commuters and the Solutions Perceived*

The commuters were requested to indicate problems which they normally encounter. The following were the problems they indicated in the order of seriousness.

- (a) Time losses during peak traffic flow periods due to traffic congestion;
- (b) Long waiting time before boarding vehicles during peak demand periods;
- (c) Overcrowding of passengers in vehicles, particularly during peak demand periods;

- (d) Lack of security in vehicles and at bus stops, which often result in pilfering;
- (e) Old and unroadworthy vehicles which cause insecurity.
- (f) Long walking distance to bus stops particularly new residential areas resulting in long walk, at times for more than twenty minutes, before getting to the nearest bus stop;
- (g) Escalating transport fare particularly during periods of fuel shortages;
- (h) High accident rate often occasioned by pedestrian-vehicle collision; and
- (i) Limited comfort in the buses.

The following is the commuters' perception of the possible solutions to the present transportation problems in Lagos metropolis:

- (1) Improving the train service to make it more effective. More rail routes should be constructed to cover the entire Lagos metropolitan area or alternatively the Metro system should be reconsidered by Government as this has a high potential to reduce the problems of commuters.
- (2) The roads in Lagos should be upgraded and/or re-constructed given their poor state.
- (3) The condition of the paratransit modes should be improved to ensure better consumer satisfaction and they should be made to complement the formal modes by running short distances.
- (3) Adequate monitoring policy on urban passenger transport must be developed and implemented to curb over-crowding in buses, over speeding, pilfering and to ensure that important routes are adequately covered by public transport services.
- (4) Allocation of financial resources should be in favour of public transport programmes.
- (5) Traffic lights should be made more functional, and should be introduced where they do not exist at the moment, to reduce accidents at junctions
- (6) Commuters should be adequately educated on urban road safety measures through the print and electronic media.

*CHAPTER FOUR***SURVEY OF INFORMAL TRANSPORT OPERATORS****4.1 Survey Methodology**

The survey of informal transport operators was conducted in May 1993. The survey combined questionnaire approach with intensive interviews of officials of the road transport employers association. A total of 257 questionnaires were randomly administered on the operators at their depots (motor parks). Ten field assistants were employed to carry out the survey for one month in May 1993. The field assistants administered the questionnaires on the operators at the various depots where they usually congregate to carry passengers on the basis of first come first out. Our questionnaire was randomly administered on every fifth operator on the que. An operator already interviewed on a previous day was excluded and the next operator was interviewed. The administration of the questionnaires on the operators was facilitated by the cooperation of the officials of the employers' and workers' associations at each depot.

The rationale for the survey of the informal public transport operators is to highlight the main characteristics and problems inherent in the operation of this form of urban transport service as well as the economics of its operation. The aspects of the informal transport operation investigated include: institutional structure, operational characteristics, and economics of operation.

Out of the 257 questionnaires administered 206 were well filled and hence were found analyzable. The 206 questionnaires cover 21 public transport depots in Lagos metropolis: Ketu, Dopemu, Obalende, Agege, Ojota, Ikeja, Iju, Oshodi, Ojuelegba, Yaba, Ebute-Metta, Iyana-Ipaja, Aguda, Ijaiye, Oyingbo, Lagos Island, Mile 2, Sango, Egbeda, Bariga and Abule-Egba. The coverage shows an adequate representation of all the important areas in Lagos Metropolis.

The 206 questionnaires were analyzed to throw light on the operational characteristics and economics of operation of the informal urban passenger transport operators in Lagos metropolis. The analyses focus on ownership pattern, vehicle and trip characteristics, vehicle maintenance, insurance, revenue, cost structure, drivers' remuneration, profit margin, and transport fare. The analytical techniques consists of relative frequency and cross tabulation.

To complement the information obtained through the questionnaires, intensive discussions were held with the officials of the Road Transport Employers' Association concerning the institutional structure and organization of the road transport industry.

4.2 Institutional Structure of the Informal Transport Modes

According to the information obtained from the Lagos State Chapter of the Road Transport Employers Association of Nigeria (RTEAN), there were over 700 unions in the Nigerian road transport industry prior to the trade union reorganization programme of 1978. The organization of trade unions along industrial lines was carried out by the Federal Military Government in 1978 and all trade unions in the country now operate under the code of conduct of a national body, the Nigerian Labour Congress (NLC). Within the context of the trade union reorganization programme, employers and workers in the road transport industry were formed into two main national bodies namely, the Road Transport Employers Association of Nigeria (RTEAN) and the National Union of Road Transport Workers (NURTW). Later, some operators broke away from the RTEAN to form another national body, the Nigerian Transport Owner's Association (NTOA), though the new body was not legally recognized. The RTEAN therefore remains the only legal association of owners and employers in the road transport industry in Nigeria, and has now absorbed the NTOA members.

The data obtained from the RTEAN revealed that the registered financial members of the RTEAN fell from 640,000 in 1978 to 110,000 by 1990, and further to about 66,000 by 1993 due to declining fortune of the Nigerian economy, the high cost of new vehicles and maintenance spare-parts, and the inability of members to meet their financial obligations to the union. Many previous vehicle owners found it impossible to keep their vehicles on the road, as thousands of vehicles were scrapped every year (see table 2). Thus, the number of registered financial members declined drastically. It should however be underlined that the above figures refer only to financial members. Therefore, the numbers of actual operators could be more since some former financial members could still be in operation.

4.3 Survey Findings

4.3.1 *Ownership Pattern*

The ownership pattern is analyzed in terms of gender and category of operators. The analysis shows that about 98.0% of the respondents were male while only about 2.0% were female operators. This is reflective of the general situation in the road transport industry in which men predominate. The analysis of category of operators shows that full-time owner operators constitute only 6.3%. Some 44.2% were part-time owner-operators while 49.5% were driver-operators (see table 17). The part-time owner-operators operate their vehicles for half of the day and employ drivers to operate the vehicles for the other half of the day. The informal transport sector is also characterized by small ownership pattern with most operators owning 1-4 vehicles.

TABLE 17
CATEGORY OF OPERATORS

<u>Category of Operator</u>	<u>Relative Frequency (%)</u>
Owner operator	6.3
Part-time owner-operator	44.2
Driver-operator	49.5
<u>Total</u>	<u>100.0</u>

Source: *Field Survey, 1993.*

4.3.2 *Vehicle and Trip Characteristics*

The types of vehicles operated by our respondents were taxis, *Kabukabu*, 911 buses, Adapted buses (*Bolekaja* and *Molue*), and minibuses locally called *Danfo*. Table 18 shows that *Danfos* predominated, accounting for 60.7% of the vehicles operated. Taxis accounted for 12.2%; Adapted buses (*Molue* and *Bolekaja*) 11.7%, *Kabukabu* (11.2%) and 911 buses 4.4%.

TABLE 18
TYPE OF VEHICLES OPERATED

<u>Vehicle Type</u>	<u>Relative Frequency (%)</u>
Taxis	12.2
911 Buses	4.4
Adapted Buses	11.7
Mini Buses	60.7
<i>Kabukabu</i>	11.2
<u>Total</u>	<u>100.0</u>

Source: *Field Survey 1993.*

The pattern of vehicles operated shows that the bulk are low occupancy vehicles., Table 19 reveals that 91.3% of the vehicles have sitting capacities ranging from 4 - 209 passengers. In addition to sitting capacity, some of the vehicles, especially the adapted buses, also have standing capacities ranging from 11-20 passengers. This explains why these vehicles are usually over-loaded during peak traffic periods. The age distribution of the vehicles sampled is given in table 20.

TABLE 19
VEHICLE SITTING CAPACITY

<u>Sitting Capacity</u>	<u>Relative Frequency (%)</u>
Up to 5	30.1
6-10	2.9
11-20	58.3
21-30	1.0
31 and over	7.8
<u>total</u>	<u>100.0</u>

Source: *Field Survey, 1993.*

TABLE 20
AGE DISTRIBUTION OF VEHICLES OPERATED

<u>Vehicle Age</u>	<u>Relative Frequency (%)</u>
1-5 Years	3.9
6-10 Years	5.6
Over 10 Years	90.5
<u>Total</u>	<u>100.0</u>

The analysis of distance plied per trip by these vehicles (see table 21) shows that short distances of 5 km and less predominated. Such trips accounted for 83.5% of the operators' trips, while trips of 6-10 km accounted for 11.7%. Distances of 11 km and above accounted for only 4.8% of operators' trips. The predominance of short distance trips is a reflection of the practice whereby operators, especially of the minibuses, break their journeys into smaller trips to make more money.

Further analysis of vehicle trips suggests that journey breaking permit the operators to make more round trips per day. Our analysis shows that 52.9% of the respondents were making over 10 round trips per day (see Table 22).

TABLE 21
DISTANCE COVERED PER TRIP

<u>Distance (Km)</u>	<u>Relative Frequency (%)</u>
Up to 5	83.5
6-7	11.7
11-15	2.9
16 and over	1.9
<u>Total</u>	<u>100.0</u>

Source: *Field Survey 1993.*

TABLE 22
VEHICLE ROUND TRIPS PER DAY

<u>Round Trips</u>	<u>Relative Frequency (%)</u>
Up to 5	25.7
6-10	21.4
11 and above	52.9
<u>Total</u>	<u>100.0</u>

Source: *Field Survey, 1993*

Analysis of the vehicle maintenance practice of the operators reveals that vehicles are poorly maintained and the bulk of the operators (95.6%) patronized open garages (road-side mechanical workshops) which are inadequately equipped for proper vehicle maintenance, while only 4.4% serviced their vehicles in standard maintenance workshops. In terms of regularity of vehicle service, some 74.8% of the operators reported that they serviced their vehicles once in every two weeks, while the remaining 25.2% serviced them once in a month. However, since most of the vehicles are old (over 90 percent of the vehicles are over ten years old), they have over-lived their economic life (usually five years by international standard) and are therefore more of liabilities to the nation. Consequently, they are unroadworthy and frequently break down thus worsening the traffic congestion problem on Lagos roads

In terms of insurance cover for vehicles, Third Party Insurance Policy predominates. In contrast to the Comprehensive Insurance Policy which covers all claims, the Third Party Insurance Policy covers only the claims by a third party in case

of an accident involving another vehicle and does not cover any claim for the repair or loss of the vehicle insured. Over 86 percent of the operators reported that they hold this type of insurance policy since it is cheaper. Also, Insurance companies also do not normally grant comprehensive insurance cover to old vehicles. Such insurance policy is normally granted to relatively new vehicles. Our findings also indicates that some operators, especially those with very old vehicles, do not bother to obtain any form of insurance cover for their vehicles.

4.3.3 *Economics of Vehicle Operation*

The economics of operation of the informal modes is analyzed in terms of cost structure, revenue, drivers' remuneration, profit margin, economies of scale, and transport fare.

4.3.3.1 *Cost Structure*

Cost structure is often categorized into variable and fixed costs. For the informal transport mode, the main variable cost items are fuel and lubricant cost, maintenance cost, and imputed labour cost for drivers. The labour cost has to be imputed since in most cases drivers in the informal transport sector are not paid formal wages. Rather they share out of revenue. This revenue-sharing approach is fully discussed in section 5.3.3.3 below.

The fixed cost, on the other hand, is made up of fixed labour cost (salaries and wages of vehicle maintenance personnel and administrative staff), cost of insurance and licenses/permits and depreciation cost. The concept of depreciation is generally unknown to the informal transport operators in practice given that most of the vehicles are old and have scrap or low resale values. If there is shortage of vehicles on the road and the existing old ones are making profit, the vehicles would have a resale value greater than their scrap value. One concept of depreciation cost based on historic costs is the reduction in sales value of assets year-to-year. This is the concept of depreciation cost which is usually of interest to Accountants. However, this concept of depreciation cost is of limited interest to an economist since investments made in the past are sunk costs which have no relevant bearing on current or future decision making. The replacement cost concept of depreciation is much more relevant to economic decision making. This is the depreciation concept which is of interest to us in this study since the most important reason for making allowance for depreciation cost is to provide for replacement capital for worn-out assets.

TABLE 23
AVERAGE COST STRUCTURE OF INFORMAL TRANSPORT OPERATORS

<u>Cost Item</u>	<u>Percentage Share</u>
	(a)
VARIABLE COST	(53.46)
Fuel & Lubricants	20.74
Servicing & Repairs	8.04
Imputed Labour Cost (Drivers)	24.68
FIXED COST	(46.54)
Fixed Labour Cost	0.00
Insurance	3.78
Licenses & Permits	1.62
Depreciation	41.14
<u>Total</u>	<u>100.0</u>

Source: *Field Survey 1993.*

Our approach in this study is to impute the depreciation cost since the concept is unknown to the informal transport operators in practice. The replacement cost concept using straight line depreciation method, assuming a vehicle economic life of five years, is adopted in this study. Based on this approach, the estimated cost structure of the informal transport modes is presented in table 23 above.

The operators' cost structure shows that variable cost constitutes about 53.46% of total cost while the remaining 46.54% is fixed cost. The analysis further shows that depreciation, is the most important cost item (41.14%). The high figure is due to the fact that we have used 5 years according to international standard, but in reality vehicles of over 10 years still ply the roads in Nigeria. The imputed variable labour cost (driver's retained earnings) accounting for 24.68% of total cost is the second most important cost item followed by fuel and lubricants cost (20.74%). Transport fare and distribution cost in general is very sensitive to fuel price increases in Nigeria given the importance of this cost item in the overall cost structure. This has been a serious political factor militating against the appropriate pricing of petroleum products in the country whenever the Government attempts to remove fuel subsidy.

Given the depreciation cost is usually not perceived as a cost item in reality by informal transport operators, informal modes are often perceived as incurring small fixed costs since they have limited overheads. They do not, for example, incur any fixed labour cost since they normally do not maintain their own repair workshops and

personnel. They also do not make allowance for administrative overhead (management cost) like the formal transport operators do, since the owner-manager does not normally make provision for his own salary.

4.3.3.2 *Revenue*

Our analysis indicates an average revenue per vehicle per day of ₦350 for Taxis, ₦360 for Minibuses (*Danfo*), ₦915 for *Molue*, and ₦1,200 for 911 buses. Out of this daily vehicle revenue, our investigation further reveals that Taxi and *Danfo* owners received on the average, ₦250 while *Molue* and 911 buses owners received ₦700 and ₦900 respectively. After meeting the cost of fuel for the day's operation, which ranged from ₦50 - ₦80 before the recent fuel price increase by over 500%, drivers retained earnings ranged between ₦50 and ₦200 per day depending on the vehicle type. Table 24 shows that average monthly vehicle earnings increase with vehicle carrying capacity. It ranged from ₦10,455 for a vehicle of 4 sitting capacity to ₦35,800 for a vehicle of 40 sitting capacity.

One principle underlying the concept of revenue in the informal transport modes, is revenue sharing between owners and drivers. The practice is that each vehicle owner usually enters into an agreement with his driver to deliver a specific amount as vehicle earning at the end of the day. The amount so agreed upon must be delivered by the driver unflinchingly whatever the traffic situation for the day may be. Whatever is left, is retained by the driver after meeting the cost of fuel for the day's operation.

4.3.3.3 *Drivers' Remuneration*

One interesting finding of this study is the concept of factor cost, especially labour cost as it relates to drivers' remuneration. Our survey reveals that 99 percent of the drivers employed by the operators were not paid formal wages. Rather, the drivers share out of revenue. The estimated drivers' monthly retained earnings ranged from ₦1,500 - ₦6,000 depending on vehicle type and size compared with formal wages of ₦600 - ₦800 indicated by the one percent of operators who claimed that they pay their drivers formal wages. Before prices of vehicles sky-rocketed in the post-SAP era, it was possible for a driver to save enough money through such revenue sharing approach, to buy his own vehicle after two to three years.

4.3.3.4 *Profit Margin*

Table 24 presents the estimated average monthly profit margin of informal transport operators. The table shows that informal transport operation is a profitable business. Average monthly profit ranged from ₦2,503 - ₦16,648 depending on vehicle passenger capacity. The apparent high profitability level of the informal transport sector

could however be attributed to the following factors: (i) shortage of vehicles on the road makes the existing ones to earn economic rent; (ii) informal transport operators do not pay income tax beyond the flat rate of ₦7.50 kobo paid by the common man in Nigeria (iii) fuel cost was not fully accounted for given that fuel was highly subsidized as at the time of our field survey in May 1993; the subsidy has since been reduced with the increase of fuel price twice (November 1993 and August 1994), thus bringing the price of ₦11.0 per litre compared with 70 kobo per litre as at the time of our field survey; and (iv) administrative overhead (management cost), represented by the owner's labour, was not provided for in terms of salary but rather lumped with profit since there is usually no distinction between business income and the owner's fortune in the informal trade in Nigeria. If the above cost items could fully be factored out, the profit margin would be much smaller.

TABLE 24
PROFIT MARGIN OF INFORMAL TRANSPORT MODES IN RELATION TO
VEHICLE SITTING CAPACITY

<u>Sitting Capacity</u>	<u>Average Monthly Revenue (₦)</u>	<u>Average Monthly Operating Cost (₦)</u>	<u>Average Monthly Profit Margin (₦)</u>
4	10,455	7,952	2,503
13	10,784	9,009	1,775
30	27,460	13,995	13,465
40	35,800	19,152	16,648

Source: *Field Survey, 1993*

4.3.3.5 *Economics of Vehicle Size*

The estimated average costs per persenger seat based on table 24 above are ₦1,988 for 4 sitting capacity vehicle, ₦693 for 13 sitting capacity vehicle, ₦467 for 30 sitting capacity vehicle, and ₦479.00 for 40 sitting capacity vehicle. The estimated average vehicle operating cost curve (Fig. 2) is "L shaped", suggesting that economies of vehicle scale are exhausted at 13 vehicle sitting capacity possibly due to the fact that bigger vehicles are more expensive to maintain than smaller ones given that their spare-parts are more expensive. There is however no indication of diseconomies of scale possibly because the administrative overhead (management cost) was not factored out. The estimated cost curve is fairly constant as from this vehicle sitting capacity. Thus, the 13 seat vehicle is the minimum optimum vehicle capacity suggested by our analysis.

4.3.3.6 *Transport Pricing*

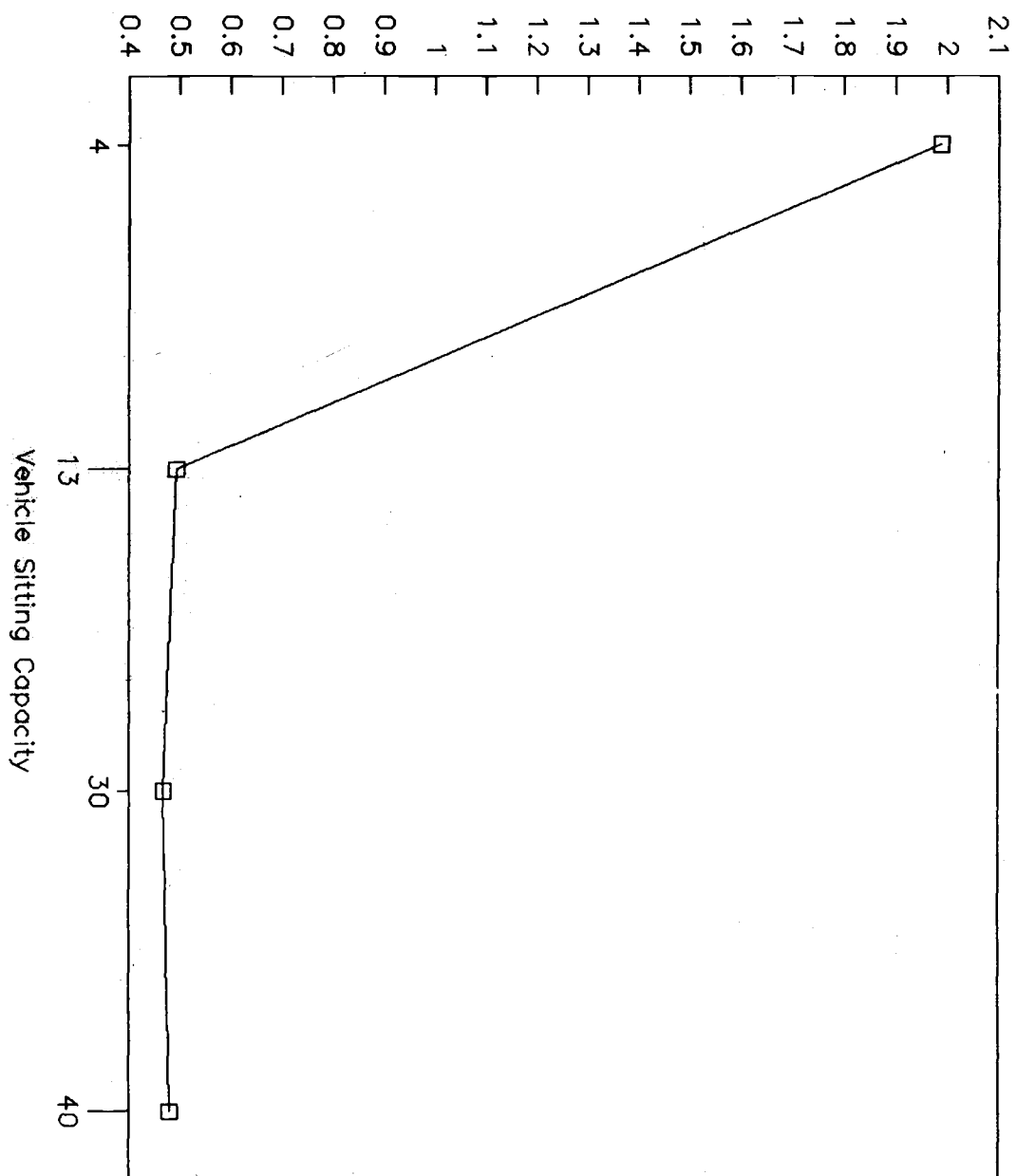
Transport fare performs two primary economic functions, one for the user and the other for the carrier: to permit movements to be undertaken and to compensate the carrier. If fares are considered too high by users, movements may be curtailed while if they are too low and do not compensate the carrier for the service rendered, the operator may run bankrupt and this may lead to cessation of service. Transport fares must therefore be high enough to compensate the carrier for its costs of performing the service as the public demands, including necessary profits to attract capital investments for this purpose.

Pricing, theoretically, is a function of both supply and demand, with supply being a function of cost. Given that profitability is a basic objective in a private enterprise, "cost of service pricing principle", is an important basis for fare fixing by the informal transport operators. In practice, costs of fuel, lubricants and spare-parts are important considerations in fare fixing.

The influence of demand on pricing of urban passenger transport services comes into a sharper focus during peak-demand periods. In a situation where the number of passengers outstrips the available transport facilities, operators apply what is termed in the literature as "value of service pricing principle". This principle dictates "charging what the traffic could bear". It is common practice for operators to charge higher fares, at times double the normal fare for a given trip, during peak-demand periods.

Concerning the level of transport fare charged by operators in the study region, our survey reveals that about 93 percent of the respondents charged over ₦6 or more on the average per trip. The situation has further worsened since the first fuel price increase in November 1993 with transport fares increasing manyfold since then. This rising transport cost has serious implications for the welfare of commuters in the study region, since the income levels are still very low.

Fig. 2.
Unit Cost (Naira) Per Passenger Seat
(Thousands)



*CHAPTER FIVE***THE FORMAL BUS TRANSPORT SYSTEM: A CASE STUDY
OF THE LAGOS STATE TRANSPORT CORPORATION****5.1 Preamble**

The Lagos State Transport Corporation (LSTC) started operation in 1978, though the decree establishing the Corporation was enacted in April, 1977. The main objective of the Corporation was the provision of an efficient and cheap passenger transportation service using the omnibus and other appropriate vehicles. For a very long time, the LSTC was the largest and the only publicly owned municipal bus service organization in Lagos State. The corporation was fully operational at the time of our field survey in May 1993. Unfortunately however, the Corporation was scrapped in November 1994 by the Lagos State Government when its operable vehicle fleet size was declining to only 4 buses.

Over the years, the LSTC has to a large extent made a significant impact on passenger transportation in Lagos. It has been the Government's means of moderating transport fares in the Metropolis. By subsidizing the LSTC and controlling its fare, the Government succeeded in forcing prices down in the private sector, thus protecting the consumers. Thus, the Government succeeded in minimizing the charging of excessive fares by private transport operators.

The LSTC operated largely intra-urban transport service. However, inter-urban service was introduced in September 1989 as a means of generating more revenue since this type of operation is more profitable. The ratio of intra-urban to inter-urban bus service was however limited to 4:1.

5.2 LSTC Vehicle Fleet Size

The LSTC vehicle fleet trend from 1980 to September 1991 is presented in table 25. Over the years, the fleet size had fluctuated. It declined from 464 buses in 1980 to 265 in 1982 but again increased to 430 in 1984. The fleet size consistently increased since 1988 due to the injection of new buses into the Corporation by the Federal Government's Urban Mass Transit Programme (FUMTP). In September 1991, the fleet size stood at 528 buses. This increase notwithstanding, the LSTC vehicle fleet remained small relative to the demand for mass transportation in Lagos Metropolis.

More important however than the fleet size is the vehicle availability rate measured by the proportion of operable buses in the total fleet. The vehicle availability rate declined from 62% in 1986 to 19% in 1985 and increased again to 72% but has since

consistently declined reaching 25% in 1991 due to maintenance problems in the face of rapidly rising prices of spare-parts.

TABLE 25
LSTC VEHICLE FLEET SIZE (1980 - 1991)

<u>Year</u>	<u>Fleet Size</u>	<u>Operable Fleet</u>	<u>% Operable*</u>
1980	464	245	53
1981	350	216	62
1982	265	215	41
1983	371	116	31
1984	430	95	22
1985	371	70	19
1986	400	287	72
1987	287	185	65
1988	335	171	51
1989	411	137	33
1990	468	150	31
1991**	528	125	25

* Index of vehicle availability for operation

** Up to September 1991.

Source: *Lagos State Transport Corporation (1991).*

This problem of low bus availability rate for transport operation was due to maintenance problem which is traceable to the multiplicity of brands and types of buses which the Corporation was operating. To solve this problem, the Corporation decided in 1979 to standardize its fleet type. Thereafter, Daimler Benz buses were imported from Western Germany after certifying them as good and durable. However, due to the rapid depreciation of the Naira exchange rate since the introduction of the Structural Adjustment Programme (SAP) in June 1986, the Naira price of this brand of vehicle has increased manifold. The Mercedes Benz bus (1313 or 1617) which was about ₦200,000.00 pre-SAP increased to over ₦1 million in 1991 and over 5 million Naira by 1994, even though import duty on the vehicle was waived by the Federal Government.

In order to encourage national self reliance, Government as part of SAP measures, started to encourage the Local Bus Assembly plants. Thus, the Federal Urban Mass Transit Programme (FUMTP), has been purchasing locally assembled buses for the various state-owned mass transit companies since 1988. This action has again worsened the maintenance problem as the brands of LSTC buses in operation increased from 2 to 7 (see table 26).

The seven different brands of buses operated by the Corporation were Mercedes Benz (German Type), Mercedes Benz (Brazilian Type), Bedford, Burem, Neptune, Leyland and Nissan. This made standardization of vehicle spare-parts difficult. Some of these buses, inspite of their high cost, are yet to attain adequate standard level.

The maintenance problem emanating from the multiplicity of brands and bus types include:

- (a) large scale need for spare parts inventory for the maintenance of the numerous bus types;
- (b) storage complication as a result of the above factor;
- (c) increased training needs for mechanics and operators;
- (d) extra costs on maintenance kits, tools and machinery;
- (e) constraints resulting from inability to transfer maintenance personnel when the need arises; since the Corporation operates a system whereby each depot specializes in specific bus types.

TABLE 26
LSTC BUS BRANDS AND TYPES

<u>S/No.</u>	<u>Make of Vehicle (Brands)</u>	<u>Types</u>	<u>Fleet Size</u>
1.	Mercedes Benz	608D	105
	Mercedes Benz	1313	111
	Mercedes Benz	1617	88
2.	Mercedes Benz (Brazilian Type)	OM 365	18
3.	Bedford	TJ 850	39
		TJ 1090	18
		TJ 1200	30
		EMV	1
4.	Volkswagen	Neptune	34
5.	Incar	Burem	5
6.	Leyland	Trailer Head	1
7.	Nissan	Civilian	60

Source: *Lagos State Transport Corporation (1991)*

This development in the transport system could be perceived as the cost of development which the nation has to pay in the short run. However, the local manufacturers must strive to improve quality and attain adequate standard level. Unfortunately however, in spite of reports made to the manufacturers on body and mechanical defects, improvements are slow in coming.

The maintenance problem was complicated by none availability of spare parts, and their high costs. As it became increasingly difficult to maintain an adequate operable fleet size, the vehicle availability rate declined drastically (see Table 25) until the Corporation was scrapped in November 1994, due to lack of operable buses.

5.3 Route Planning and Bus Scheduling

From the inception of the Corporation, all route related matters were handled by the Traffic Department. However, in 1986, a Corporate Planning Unit was established

to handle corporate affairs which include route planning and management. The Unit was later scrapped and in its place the Route Planning and Monitoring Unit was established. In 1990, the Unit was reconstituted into two units namely, Route Planning and Statistics and the Inspectorate Units.

The LSTC operated within the fifteen Local Government Areas in Lagos State. Over the years, the number of routes have fluctuated (see table 27). With the growth in fleet size, the number of routes increased from 99 in 1978 to 172 in 1981, but declined gradually to 121 in 1988 due to the rationalization of routes for better efficiency in accordance with the LSTC Action Plan covering 1986-1990. As at September 1991 therefore, the LSTC buses were operating on 163 routes.

TABLE 27
PROFILE OF LSTC ROUTES (1980 - 1991)

<i>Year</i>	80	81	82	83	84	85	86	87	88	89	90	91
No. of Routes	145	172	172	172	172	172	158	151	121	134	168	163

Source: *Lagos State Transport Corporation (1991).*

The Corporation had seven depots from where buses were operated on a daily basis. The master roster used in scheduling the buses were prepared by the Route Planning and Statistics Unit. The buses were operated in two shifts which span the hours of 5.30 a.m. to 10.00 p.m. The morning shift was operated from 5.30 a.m. - 2.00 p.m. while the afternoon shift overlapped from 1.30 p.m. - 10.00 p.m. Depending on the number of buses available on each route per shift, buses were scheduled to have headway of between 5 to 30 minutes.

5.4 Economics of Bus Operation

The discussion of the economics of operation of the Corporation focuses on sources of income, revenue and expenditure as well as pricing. The Corporation had five main sources of income namely revenue from daily vehicle operations, adverts on buses, government grants (subsidy), rents on its properties as well as receipts from such activities as sales of scraps, tubes, tyres etc. The chief source of income however was the revenue from bus operation.

TABLE 28
LSTC: REVENUE AND EXPENDITURE (1988-1990)

<i>Expenditure/ Revenue (Naira)</i>	<i>1988</i>	<i>1989</i>	<i>1990</i>
A. Expenditure:	4,496,258	10,768,840	11,338,573
2. Fuel Oil and Lubricant	2,102,356	3,009,049	4,193,432
3. Tyres and Tubes	1,365,54	3,312,716	5,065,859
4. Salaries, Pensions and Allowances	4,492,440	7,823,179	9,669,462
5. Workshop Depot Maintenance	3,525,929	5,281,618	12,735,455
Total Expenditure	15,982,525	30,195,447	43,002,781
B. Revenue: (i) Buses	12,558,502	17,873,990	25,325,699
(ii) Cars	-	-	2,571,126
(iii) Cars	-	10,396,068	7,813,535
Total Revenue	12,558,502	28,270,058	35,781,440
Deficit	(3,424,023)	(1,925,389)	(7,221,341)
Operating ratio	1.27	1.07	1.20

Source: *Lagos State Transport Corporation (1991)*

The revenue profile (Table 28) shows that revenue from operation of buses increased from about ₦12.6 million in 1988 to ₦25.3 million in 1990. In addition, in 1990 when the Corporation commenced the use of cars for inter-city transport, some ₦2.6 million was realized from this operation. Also, about ₦10.4 million and ₦7.8 million were realized from other activities of the Corporation as revenue in 1989 and 1990 respectively. On the whole, total revenue increased from about ₦12.6 million in 1988 to ₦35.8 million in 1990 in nominal terms.

If total expenditure (see Table 28) over the three years is compared with total revenue, deficits were consistently incurred over the period. The operating ratio (total cost/total revenue) was 1.27 in 1988, 1.07 in 1989 and 1.20 in 1990. An operating ratio above 1.0 reflects the inability of the LSTC to cover its costs. It is worth noting that the reported expenditure profile for the Corporation makes no provision for depreciation which is an important cost item if the Corporation is to be able to replace its worn-out buses. Thus, LSTC loss situation will become more serious if provisions are made for depreciation cost.

One of the major reasons for the unhealthy financial situation of the LSTC is the low fare charged on the Corporation's buses due to the fact that the LSTC has over the years been the government's instrument for moderating transportation fares within the metropolis. For several years, the Corporation charged fares ranging between 10k and 30k until 1986, when the Peak Period Express Service (PPES) was introduced. Even though the private operators maintained the same fare as the LSTC, they engaged in the act of breaking their journeys especially during peak periods as a means of increasing fares. Recently, the fare on LSTC buses was increased to ₦1 per drop, especially that the Government is unwilling to continue to subsidize the Corporation. Comparatively, private operators make over ₦6 over similar route. Cost recovery and reduction of subsidies especially on petroleum products and to public enterprises, are part of the policy measures of the Structural Adjustment Programme in Nigeria. However, for the financial and operational performance of the LSTC to improve significantly, the Corporation should have been commercialized and granted complete autonomy. This was not done and the Government was not willing to continue to subsidize the enterprise, hence its eventual scrapping.

TABLE 29
LSTC OPERATING COST STRUCTURE

<u>Cost Category</u>	<u>Percentage Share</u>
Spare-Parts	29.8
Fuel and Lubricant	10.4
Tyres and Tubes	10.9
Labour Cost (Salaries pensions and allowance)	24.7
Workshop and Depot Maintenance	24.2
<u>Total</u>	<u>100.0</u>

Source: *Computed from Table 28.*

Further analysis of the LSTC's expenditure profile in table 28, reveals the structure of operating costs presented in table 29. Based on average figures over the three year period, 1988-1990, the operating cost structure shows that expenditure on spare parts constituted 29.8% of operating cost, fuel and lubricant 10.4%, tyres and tubes 10.9%, labour cost (salaries, pensions and allowances) 24.7% and workshop and depot maintenance 24.2%.

5.5 Concluding Remarks on the Formal Transport System

The LSTC, as the largest municipal bus service organization within Lagos State, has over the years set a standard in the public transport system not only within Lagos State but throughout the Federation. It has performed consultancy function for most of the municipal transport organizations within the country. It has also helped to moderate transport fare within the Lagos State. However, the Corporation's inability to properly maintain its vehicles resulted in a drastically reduced operable bus fleet and its eventual scrapping in November 1994. The sad experience of the LSTC has demonstrated the fact that such a formal bus-based mass transit system is highly unsustainable in the face of sky-rocketing prices of vehicles and spare-parts in Nigeria and hence inadequate to cope with the enormous transportation demand in Lagos Metropolis. The fact that the Lagos State Government failed to grant the Corporation the necessary commercial autonomy while at the same time unwilling to continue to subsidize the Corporation indefinitely, contributed greatly to its poor financial and operational performance.

Given the demise of the LSTC from the Lagos urban transportation market and the absence of an efficient and comprehensive rail-based system such as the metroline, the informal transport modes have a major role to play in the provision of urban passenger transport services in the Metropolis if an acute mobility crisis and suffering of commuters are to be averted. The analysis of the informal transport modes in chapter 4 however revealed that they are ill-equipped for such a role since their existing vehicles are old and they offer poor quality of service. The informal modes therefore need to be revitalized to play their rightful role in the urban transportation setting in Lagos Metropolis.

*CHAPTER SIX***GOVERNMENT'S POLICY AND PROGRAMME TOWARDS
URBAN PASSENGER TRANSPORT****6.1 Federal Urban Mass Transit Programme**

The Federal Mass Urban Transit Programme (FUMTP) was introduced in January 1988 as a direct response to the deteriorating urban mobility situation which had by that time reached a crisis proportion in Nigeria. The goals of the FUMTP are primarily to:

- (1) reduce the hardship suffered by commuters and improve traffic flows and to improve and modernize the urban transit services:
- (2) lay the foundation for developing a comprehensive and integrated mass transit system in Nigeria; and
- (3) use the programme as a vehicle for the promotion of local technology and employment creation.

To achieve the above objectives, the FUMTP was designed to complement the states and private sector efforts through the following programme of action:

- (a) Road-Based Projects: This relates to procurement and allocation of buses and spare parts to the states, assistance for workshop maintenance facilities, and basic road and traffic improvement measures.
- (b) Rail-Based Projects: This entails refurbishing and repairs of rolling stock and track improvement for urban commuter rail service at potentially viable centers.
- (c) Water-Based Projects: This comprises repairs and refurbishing of broken-down ferries, jetties and terminal improvements, as well as construction of new ones for commuter ferry services in the riverine coastal centers.
- (d) Intermodal Projects: This includes technical training assistance and manpower development, long-term plans for integrated projects, policy development and operational guidelines and monitoring.

The projects were scheduled to be executed within three overlapping phases: Short-term (1988-89), medium-term (1990-92) and long-term (post 1992).

In addition to these physical projects, the Federal Government has also adopted other monetary and fiscal incentives to promote the development and usage of mass transit services. These include: the 1989 discriminatory fuel price whereby private vehicles paid more than commercial vehicles, but which was later abolished by the 1990 budget; reduction of import and excise duties on commercial vehicles and trucks; and special foreign exchange allocation for the importation of spare parts (Bolade, 1990, p. 9).

Since the commencement of the programme, about ₦500 million has been expended on the execution of the requisite projects at the federal level. The followings are the physical achievements so far recorded.

Road component: Over 1,500 buses together with about 15% valued spare parts have been procured and allocated to the 30 states of the Federation, and the Federal Capital Territory Abuja and some specialized Federal Agencies. The states also complemented the Federal efforts with another set of 1,200 buses while the Federal Ministries and Agencies have also expanded their staff bus fleet by over 500 buses. All told, over 3,000 buses have been injected into the urban public transport market in Nigeria since the inception of the programme.

Out of this number, some 429 buses were injected into Lagos Metropolis. The FUMTP allocation was 129 while the Lagos State Government purchased 300 new buses. As earlier noted, these buses helped to improve the vehicle fleet of the LSTC. In addition, some traffic management schemes targeted at improving urban traffic flow and bus productivity were also initiated in Lagos. These include installation of traffic lights at 7 strategic locations; construction and rehabilitation of lay-byes and bus shelters at 13 locations; construction of median barriers at 14 bus stop locations along major bus routes; and construction of a modern interstate bus terminal at Ketu and the rehabilitation of another at Ojota.

Water component: Some key projects have been executed under this component of the FUMTP. Nineteen Ferries have been rehabilitated while four ultra modern passenger water buses have been built. In Lagos, some jetties were rehabilitated at Marina, Maroko, and Festac to provide infrastructural support for the programme while an intermodal terminal for rail, road, and water operations has been built at Ijora.

Rail component: The Nigerian Railway Corporation (NRC) has responsibility for the execution of the rail-based associated projects and operation of services. With the assistance of FUMTP, track doubling works at Ebute Metta Junction - Apapa and Ikeja - Iju sections of the Lagos Metropolitan rail network have been undertaken. The NRC have also mobilized its internal resources to renovate and refurbish eleven locomotives and 62 coaches for the operation of the urban mass rail service in Lagos and later along

the following axis: Enugu - Port Harcourt - Enugu, Kaduna - Minna - Kaduna, Kaduna - Zaria - Kaduna, and Ibadan Metropolis.

Inter modal component: The FUMTP has been providing technical assistance to the state mass transit operators in the form of training programmes, issuance of operational and policy guidelines, as well as monitoring of operations.

The FUMTP is a laudable scheme designed to combat the mobility crisis of the Nigerian urban centers. The programme has however made limited impact on urban mobility problem in Lagos Metropolis because of its concentration on the bus mode. It has however not been possible for the Government to provide enough buses to fully address the urban mobility crisis due to the exorbitant prices of vehicles, as huge crowds at the bus stops during peak travel periods attest to. In a place like Lagos Metropolis, the bus-based mass transit mode has proved to be an inadequate approach to the urban mobility crisis given that it is unsustainable in the face of the exorbitant replacement costs of new buses and spare-parts. The buses injected to the LSTC by the FUMTP has turned out to be a colossal waste of money given the recent scrapping of the Corporation.

The Government urban passenger transport policy should focus on the development of an efficient rail-based system complemented by the informal modes for short-haul traffic as the appropriate response to the urban mobility problem. As indicated in sections 3.2.5 and 3.2.6, the viability and possible profitability of a rail-based mass transit system for Lagos Metropolis have been demonstrated by existing studies. A publicly-owned bus mode, like the LSTC, could be part of the transport supply mix as is the case in other large cities of the world, provided that the Government is willing to grant it full commercial autonomy in order to enhance its profitability and operational performance

6.2 Government Policies Towards Informal Transport Modes

The policy regulating the operation of road transporters in the study region is embodied in the Road Traffic Law (Western Nigeria, 1947), introduced by the Colonial Administration. This Law, almost without any major modification still regulates the conduct of road transportation in Lagos and other parts of Nigeria. Though the provisions of the Law covers the whole Federation, its administration and execution are the responsibility of State Governments. The Road Traffic law makes provisions for the registration and licensing of vehicles, licensing of drivers, special trade licenses and hackney carriage permits. It also regulates the construction and use of vehicles.

6.2.1 *Vehicle Licensing*

The registration and licensing of vehicles in Lagos Metropolis is the responsibility of the Licensing Authority which has offices in each Local Government Area. The licensing authority assigns to a newly registered vehicle a specific number, which together with a distinctive letter assigned to the Licensing Authority in the area, forms the identification mark of the vehicle. Each Licensing Authority is required by law to keep a register for the registration of vehicles in its area of authority. Unlike in the past, if the ownership of a vehicle changes, the registration number can no longer be changed by re-registration. This is to curb the wave of vehicle theft in the country.

Apart from registration and licensing of vehicles, a vehicle for commercial transportation is required to be licensed for that purpose by taking hackney carriage permit after the payment of the prescribed fee. In addition, vehicles used for commercial transportation in Lagos Metropolis are painted in a special colour (black line on yellow background), and are assigned a number, different from the identification mark.

6.2.2 *Drivers' Licensing*

The Road Traffic Law requires anybody driving a motor vehicle in Nigeria to be properly licensed for the purpose. Drivers' licenses are of two categories: professional and private. Commercial drivers are required by law to hold the professional driving licence. Recently, the responsibility for the processing of driving licenses was transferred to the National Roads Safety Corps (NRSC). A driving licence is valid for five years before renewal.

6.2.3 *Vehicle Design and Specification*

The Road Traffic Law also regulates the construction and use of motor vehicles for public transportation. Before a vehicle could be allowed to ply a public road in Nigeria, such a vehicle must be constructed in a way that it is capable of moving both forwards and backwards, except its net weight does not exceed 5 cwt. The overall width should not exceed 2.5 meters, while the height from the ground with any load placed thereon should not exceed 3.4 meters. No vehicle which does not have four doors, is permitted to be used for public transportation in Lagos Metropolis.

A motor vehicle used for public transportation is required by law to be provided with two independent and efficient break systems, and all engines should be efficiently silenced and no cutouts or open exhaust are allowed. To protect the right of way, the Road Traffic Law also has provisions for maximum vehicle weight. No motor vehicle may be used on the highway if the axle weight of any of its axles exceeds four tones,

or if its gross weight exceeds eight tons, except with the written permission of the Minister of Transport.

6.2.4. *Route and Terminal Allocation*

The Central licensing and Parking Authority has responsibility for allocating routes to both formal and informal transport modes. By 1981, the LSTC has got 172 routes allocated to it in the Lagos Metropolis, up from 99 routes in 1978. As the analysis in section 5.3 has shown, LSTC buses operated on only 163 routes as at September 1991. Table 30 indicates the allocation of routes between the formal and informal transport buses in Lagos Metropolis as at September 1991. The Table shows that 111 routes were exclusively for LSTC buses, 73 routes were exclusively for the informal mode buses like the 911, *Molue*, minibuses and *Bolekaja*, while 52 were shared routes.

TABLE 30
ROUTE ALLOCATION WITHIN LAGOS METROPOLIS BETWEEN FORMAL
AND INFORMAL TRANSPORT MODES

<u>Bus Type</u>	<u>Exclusive Routes</u>	<u>Shared Routes</u>	<u>Total</u>
LSTC	111	52	163
Informal	75	52	127

Source: *LSTC, 1991.*

In terms of terminal facilities, there were about 250 bus stops within Lagos Metropolis. The bus stops are meant to serve LSTC buses, although other buses also use them. They ensured that LSTC bus services were available to passengers within reasonable and convenient walking distances, especially in areas adjacent to LSTC routes.

CHAPTER SEVEN**CONCLUSION**

This study focuses on both the users and the operators of urban informal passenger transport in Lagos Metropolis. The survey of users examined the socio-economic characteristics of commuters in the study region as well as their evaluation of quality of service attributes of transport modes. The result of the survey reveals that cheap transport fare, ready availability, and safety are the most important quality of service attributes to commuters. The ability of the informal transport modes to satisfy these attributes will enhance the demand for their services. The informal transport modes were ranked highest in terms of ready availability, but they received relatively lower ranking in terms of the other desirable attributes.

The survey of the informal transport operators threw light on their operational characteristics and their economies of operation. Our analysis of the informal transport modes reveals that small scale operators owning 1-3 vehicles predominate; most of the vehicles in operation are old (over 10 years old), and are poorly maintained. They are not serviced in standard garages but in open garages locally called road-side mechanical workshops in Nigeria. The insurance cover for these vehicles are usually Third Party.

The analysis of the economies of the operation of the informal transport modes revealed that variable costs account for about 59% of total cost while fixed costs account for the remaining 41%. The high fixed cost share is due to imputed vehicle depreciation cost which informal operators do not normally take cognisance of, but which is an important cost item because of the need for replacement capital. This imputed depreciation cost notwithstanding, this study reveals that informal vehicle operation is a profitable business in contrast to loss making which characterized the LSTC, a formal transport operation. The study also throws light on the issue of economies of vehicle size in the informal urban transport modes. The estimated vehicle operating cost curve per passenger seat is "L" shaped, suggesting a minimum optimum vehicle size of 13 passenger seats.

Based on the commuters evaluation of the quality of service attributes of the various transport modes, the viability and possible profitability of a rail-based mass transit system demonstrated by existing studies for Lagos and the profitability of the informal modes, the policy implication of this study is that a rail-based mass transit mode complemented by a modernized informal transport system plying short distances to feed the rail mode, is the appropriate response to the urban mobility crisis in Lagos Metropolis. The Federal Government should therefore endeavour to introduce a metro system or increase the coverage of, and modernize the conventional rail mode in the study region to improve its quality of service. A publicly-owned (formal) bus mode

could be an effective component of the transport supply mix like the situation in other world large cities, only if it is allowed to operate purely on commercial principles and granted full autonomy, otherwise it would be a waste of public fund as the experience of the LSTC has demonstrated.

Also, a careful attention should be paid to means of increasing the supply of informal modes vehicles, especially buses, at avoidable cost. Some of the possible ways to achieve this objective are the reduction or abolition of import and excise duties on commercial vehicles and spare parts and government's guarantee of Bank loans to private operators for vehicle purchase.

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