



A Study of the Performance of Public Transport Company in Niger State, Nigeria

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Abstract

This paper evaluates the variables that tend to determine the level of performance of Public (Government – owned) transport companies in Niger state of Nigeria. It identifies the variables that are influencing and/or determining the performance of public transport company in the study area. This study was carried out in Minna, the administrative seat of Niger State, Nigeria. The selection of this state is based on the preponderance of Public Transport Company in the area. For the purpose of this study, the entire management and/or operators of public transport company in Niger State, Nigeria constituted the population of the study. The public (government- owned) transport company in the study area was selected and some key officials both senior and junior spectra were purposively selected for data collection. Structured questionnaires and interview techniques were adopted for data collection. A total of forty six (46) out of sixty (60) questionnaires (that is, about 77 percent response rate) were collected and found analyzable: The result of the findings showed that, of the three functional forms of Ordinary Least Square (OLS) method of regression analysis fitted, linear function was chosen as the lead equation based on the R^2 , t and f- values. It was found out that cost of maintenance had coefficient of 1.999 and the coefficient is significant at 5% level while organization structure is also significant at 10% level.

Keywords: Mileage, Peak Demand, Profitability, Public transport, Mass transit

1. Introduction

Public sector bus enterprises in Nigeria are either owned by Federal, State or Local government. Prior to the introduction of the Mass Transit Programme in 1988, public sector involvement in urban passenger transport services was very negligible. The first generation of public sector bus operators came into existence shortly after Nigeria's political independence. These include the Ibadan City Bus Service, which collapsed in 1976 (Adeniji, 1983). Many more of state-owned bus transport undertakings established in early 1970s collapsed in the second half of 1970s and early 1980s. These included Kano State Transport Corporation (operating then as Kano Line), Kwara Line and Plateau State Transport Corporations among others. Some of the reasons identified for their collapse included; financial impropriety, inadequate government financial support, lack of qualified staff to man their operations, political interference, and uncontrolled competition from paratransit operators (Adeniji, 1983). The few municipal bus undertakings that survived until 1988, when the mass transit programme was introduced, included Water Line, Bendel Line, Borno Express, Kaduna State Transport Authority and the Lagos State Transport Corporation (LSTC), although many of them were actually running skeletal service at that time (Adesanya, 2002.a).

The public sector involvement in public transport is not strictly restricted to the provision of road passenger services; the Nigerian Railway Corporation provides rail services while the Lagos State Ferry Corporation and the Federal Inland Waterways Department (IWD) of the Federal Ministry of Transport were involved in the provision of ferry services. The ferry operations of the IWD were later transferred to the Federal government owned Central Water Transport introduced since 1988 have either shrunk considerably or are no longer available. For example, the Ibadan Metropolis rail service has completely collapsed and even the mass transit rail service in the Lagos metropolis is only managing to survive.

Since 1988, virtually every state government in Nigeria has established its own transit undertaking. Local governments are also increasingly involved in the provision of public transport services. While, state and local government public transport undertakings are relatively more organized, the most of the private sector operators are largely unorganized and depend more on fare revenues and financial supports from informal sources such as friends, relatives, money lenders in order to finance their operations (Adesanya, 2002.b).

Many governments owned mass transit companies in Nigeria have better trained staff, workshops and maintenance facilities than most of private sector operators. Their services are often provided on fixed routes, and are usually cheaper than those provided by private sector operators. Most government owned bus undertakings have bus service schedules or time tables, but in practice they are seldom followed because of the inadequacy of vehicles, declining fleet utilization rates, growing competition with private and paratransit operators, poor traffic management, congestion problems especially during peak travel periods and other problems associated with the operating environment (Umar, 2003).

2. Literature review

State's Involvement in Transport Development in Nigeria

Prior to the advent of motorized means of transport in Nigeria for the purpose of inland transportation, at the eve of the twentieth century, most movements were made along footpaths and bush tracks. In the savanna region, people were able to tame horses and donkeys for their movement needs, while those in the forest region relied more on human porter age, in the movement of freight. Logs, rafts, calabash and small dug out boats were also used across rivers, creeks and lagoons for moving passengers and freight (Walker, 1959 and Mabogunje, 1968). The Trans-Saharan trade routes also provided the links between Nigeria and the Mediterranean region for several centuries and the network footpaths that connected the urban centres of Yoruba land (Mabogunje, 1968). The sea voyages and explorations of the West African coastline, starting from the fifteenth century, made it possible for the Portuguese explorers to reach the Bight of Benin in 1485 (Burns, 1942). Since then, direct contact between Nigeria and other parts of the world by the sea route had widened, while the trans-Saharan trade routes declined in importance, to the point of total disappearance.

When the colonialists took up the reins of government in Nigeria, inadequate transportation facilities constituted a serious handicap. This was in spite of the fact that the colonial administration required a fast and efficient transport system to traverse a territory, whose Northern boundary was about 1200 kilometers away from the Atlantic coast and about 1400 kilometers across at its widest area, in order to establish effective occupation of the territory (Mabogunje, 1968). Consequently, the colonial government began the construction of the western rail line, from Lagos, in 1898. The eastern line was also constructed, starting from Port Harcourt, through Enugu to Kaduna, while branch lines were later laid to Kaura Namoda, Baro, Nguru and Idogo (Jakpa, 1981). The development of the railways accentuated the expansion of the city along sector pattern. A notable development at this stage was that of special nuclei along the hedges, which is the result of the decentralization of the functions of the Central Business District (CBD) and the creation of minor ones such as state and / or local governments. Hence, impact of the state has been felt more in the area of bus service delivery, rather than freight haulage. However, when compared with private sector involvement, public sector involvement in the direct provision of urban bus services still remains insignificant. The public involvement dates back to the easily 1930s when the native authority in Kano provided bus services around the city. Later on, the Lagos City Council set up the Lagos Municipal Transport Service (LMTS) in 1958, while the Ibadan City Council started the City Bus Service in 1964. This was later operated as a joint venture with the Oyo State Government (Adeniji, 1983a and Adeniji, 1983b). In the early 1970s, there was, for the first time, more public sector involvement in the running of both intra-urban and inter-urban bus services. Several state governments established their own bus undertaking, which included Bendel Line, Kaduna State Transport Authority, Kwara Line, Water Line, Lagos State Transport Corporation, North East Line, Plateau State Transport Corporation, among others (Adeniji, 1983a; Filani, 1991 and Adesanya, 1994). Unfortunately, most of them collapsed by the late 1970s or early 1980s.

The introduction of the Urban Mass Transit Programme in 1988 by the Federal Government due to the serious urban mobility crisis, occasioned largely by the depressed Nigerian economy, created a situation in which virtually all state governments established their own bus undertaking for direct bus service delivery (Bolade, 1989 and Adesanya, 1994). With respect to road freight services, the road haulage industry is entirely dominated by the private sector. Although in

the early 1980s, the Federal Government established the National Freight Company, to compete with private haulers. Unfortunately, its operating and financial performance led to its dissolution in the mid 1980s.

The involvement of the state in direct transport service delivery is not limited to the road transport sector. The state got involved even in Air transport. For example the Nigeria Airways limited was establishment in 1958 in partnership with Elder Dempster Lines, and British Overseas Airways Corporation (BOAC) in 1961, made the Nigeria Airways a wholly state owned corporation (Ogunjumo, 1992 and Fejoku, 1996). However, the Federal, State, Local Governments of Nigeria was much involved in road transport than in other modes.

2.1 Urban Mass Transport Operations in Nigeria

The urban transportation problem arises principally because of high concentration of population, economic activities, and educational and social facilities in relatively small areas, particularly with poor land use planning. These activities generate demand for transport services far in excess of supply of such services (Bolade, 1993). Arising from this, the Federal Urban Mass Transit Agency (FUMTA) was established in 1988 as Government response to the mobility crisis arising from the gross inadequacy of the various modes of public transportation in virtually all the urban centres in the country. With the adoption of Structural Adjustment Programme in 1986, the cost of procuring vehicles, spare parts and fuel rose astronomically, to the extent that many car owners abandoned their cars and the demand for public transportation increased (World Bank, 1990). On the side of the transport operators, there was an equally rapid decline in the acquisition of new buses and the few buses that were available could not cope with the demand problem above. The rail system could not help much because the NRC was ill equipped for urban mass transportation. Ferry services in the riverine areas could not help because it only existed in Lagos and Port Harcourt. It is sad to note that none of the major cities had an effective traffic management system, thus, the Task Force on Urban Mass Transit was therefore established in January 1988 to ameliorate the frustrations and hardships being experienced by workers and communities in all the major cities. This was backed up by a proposed budget of N700 million for implementation of various urban mass transit projects. The report of the task force, which was presented on March 4, 1988, contained recommendation on programs and projects designed to relieve the situation and institutional machinery for implementation. A Mass Transit Implementation committee was formed on late March under the chairmanship of the then Minister of Transport. The committee was dissolved in September 1988 and a sole Administrator was appointed to continue with the implementation process under the Federal Urban Mass Transit Programme (FUMTP, 1989).

The 1988 Federal Government intervention further drew inspirations from such federally organized nations like Federal Republic of Germany and the United State of America. In these later countries, the development of strategic urban heavy transit system such as the metro lines, bus ways, and public transport improvement measures in the bigger metropolis are often financed with Federal grants (Bolade, 1993).

Similarly, operating subsidies on some of the systems are granted annually by the Federal, State and Local Government equipment on the basis of some defined parameters.

Suffice it to say that the Federal Government interventionist activities over some time and through FUMTA were categorized into four groups as follows:

(i) Facility Support and Infrastructural Improvement Project

At the commencement of the FUMTA's programme, the State-owned transit companies formed in the then 21 States and Abuja, and later 30 States with the creation of 9 additional states in 1991, and 6 more states in 1996, were the target groups for improving the public transport at the State and Local levels. Thus for the smooth take-off and/or growth, FUMTA has been offering grant-aided facilities in the form of maintenance; workshop equipments; mobile workshop and tools; traffic improvement measures. In the case of Lagos; construction of coastal jetties and inter-state terminus at some regional urban centres; and institutional support and training were also supported.

(ii) State-owned Mass Transit Schemes

This involved a programme of injecting of over 2000 Federal Assisted Buses into the public transport service network. About 85% of those buses were given to the state-owned companies under concessionary loan conditions (including no payment of advanced deposit, payment of cost of buses over 3-5 years of 3-6% gross interest rates). The balance of 15% was allocated in the form of grants to Federal Colleges, Universities and other Tertiary Institutions and specialized Agencies, (Filani and Abumere, 1993).

2.2 Operational Costs of Public Transport

The operational costs of public transport are determined by a number of variables. In the bus industry, operating cost can be related to three main variables.

(a) **Time:** Interest payments on capital, depreciation. Management and wage payments are related to the passage of time rather than mileage operated or seats provided.

(b) **Mileage:** Fuel, tyres and some maintenance cost are related to mileage directly

(c) **Peak Demand:** Changes in peak provision created needs for changes in the number of vehicles, crews etc. these in turn affect depreciation, depot costs, wages and salaries.

It is necessary for revenue and costs to be apportioned to individual routes in order to establish route profitability and thereby facilitate optimum vehicle utilization. The allocation of cash revenue to individual routes is generally straight forward, being derived from waybill analysis. However, the increasing use of journey tickets does present a problem in the allocation of revenue and number of passengers carried on such tickets. Electronic Monitoring equipment is a viable, but such a level of sophistication is not always appropriate in developing countries and the revenue from journey tickets can usually be allocated with acceptable accuracy using sampling methods. The allocation of costs is less straightforward than the allocation of revenue following traditional practices. Even today it is not uncommon for route profitability to be assessed on the basis of comparing average revenue per kilometer with the average total cost per kilometer. This crude approach takes no account of the fact that in the short term certain costs are fixed and that others are variable in relation to factors other than kilometers.

For route costing purposes, it is necessary to split total cost between those costs that are related to the number of kilometers operated (e.g. capital costs and licensing) and overheads. In those organizations where crews are paid on the basis of hours worked, there will be a fourth category of costs, that is those related to hours operated.

Costs are not a function of only one factor. Maintenance costs, for example, although principally related to kilometers operated, are to a lesser extent also a function of vehicles owned and have to be apportioned accordingly, often on the basis of best estimates. Analysis of route revenue and costs as described enables the traffic department to plan the utilization of vehicles so as to maximize the contribution to fixed costs and to obtain short run profit maximization only in the long run. When all costs become variable, it does become appropriate to consider profitability in terms of total revenue against total costs.

Finally, in Nigeria, it is very difficult for some public transport operators to acquire spare parts for operational use. Also the prices of other operational inputs like tyres, tubes, fuel and lubricants have risen so rapidly over the years that some private public transport companies had difficulty in coping. The prices of some of these inputs have risen above 5000% within a period of ten years. For example, tyres for midi-buses rose by 913% from 1991-2000, while prices of petrol, diesel and engine oil (drum) rose by 3142.9%; 5714.3% and 1050% respectively, over the same period of 1991 to year 2000 (Aworemi and Ogunsi, 2004).

3. Research methodology

This study was carried out in Minna, the administrative seat of Niger State, Nigeria. The selection of this state is based on the preponderance of Public Transport Company in the study area. For the purpose of this study, the management and/or operators of public transport company in the State constituted the population of the study. The public (government owned) transport company in the area and some Key officials, both senior and junior staff were purposively selected for questionnaire administration. A total of sixty (60) copies of questionnaire (that is, 77 % response rate) were analyzable.

For the purpose of this study, the collected data were analyzed using multiple regression technique whereby the variance in the independent variables is explained by a set of predictors at the same time, gives which of the set of predictors is the most important in explain the variance.

The research involved working with the independent variables of years of establishment of the corporation (X_1), Cost of maintenance (X_2) government policies on importation of spare parts (X_3), total number functioning vehicles (X_4), state of the roads and its networks (X_5) effect of exchange rate (X_6), effect of paratransit (X_7), staff strength (X_8) and organizational structure/managerial factors (X_9).

The performance function model was estimated using three functional forms of linear, semi – log and exponential equations.

The equations are stated below as:

Linear function:

$$Y = a_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + \dots + b_n X_n + U_1 \dots \dots \dots (i)$$

Exponential function:

$$Y = e^{b_0 + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + b_5 x_5 + b_6 x_6 + \dots + b_{14} x_{14} + u} \dots \dots \dots (ii)$$

Semi-Log function:

$$\text{Log } Y = a_0 + b_1 \ln X_1 + b_2 \ln X_2 + b_3 \ln X_3 + \dots + b_n \ln X_n + U_i \dots \dots (iii)$$

Where

Y= dependent variable (turnover)

$X_i - X_n$ = Independent variables

a_0 = constant term/slope or intercept

$b_i - b_n$ = parameters estimated.

U_i = Error term

Ordinary Least Square (OLS) was used to derive estimates of the parameters of explanatory variables in the equations. The best-fit equation was selected based on the value of R^2 , t – test and F – test of overall equation.

4. Results and discussion

The following regression results were obtained from the three-fitted function forms (Table 1). The linear function was chosen as the lead equation based on the R^2 , t and f – values.

The linear regression results obtained is as follows:

$$Y = -13.578 + 0.742 X_1 + 1.999 X_2 + 1.480 X_3 + 1.230 X_4 + 0.776 X_5 - 0.331 X_6 - 0.304 X_7 + 0.115 X_8 + 2.06 X_9$$

(0.30) (2.12) (1.67) (1.10) (0.82) (-0.32)
(-0.32) (0.11) (1.76)

t – ratio values are in parenthesis.

*Significant at 5%

**Significant at 10%

The regression results showed that, if the coefficient of X_1 ($B_1=0.742$), that is year of establishment of the corporation is increased by one unit, the performance would increase by 0.742 units. This indicates that the older the public transport company is, the more the performance in terms of turnover expected of her. Meanwhile, cost of maintenance (X_2) had a coefficient of 1.999 ($B_2= 1.999$) which implies that increase or improvement in the cost maintenance of the vehicles possessed would influence or improve the performance or turnover by 1.999 units. This size of coefficient is significant at 5% level meaning that the cost of maintenance would have significant influence on the turnover. Most often, maintenance use to play vital importance on the performance of public transport companies. This corroborates the earlier findings of Ogunsiji and Aworemi (2004) that preventive maintenance has significant influence on the output of small scale transporters in selected towns of Osun State, Nigeria.

In addition, the coefficient ($B_3=1.480$) of X_3 , though nor significant, showed that if the government policies on importation of vehicles and auto spare parts is improved by a unit, the performance would increase by 1.480 units. However, the insignificant of the coefficient is an indication of the abysmally low levels or negative impact of the policies on the selling prices of the vehicles and of auto spare parts.

Trailing behind this, total number of functioning vehicles (X_4) has a coefficient of 1.230 ($B_4=1.230$). This implies that, if the total number of functioning vehicles is increased by a unit, the performance (that is, the turnover) is increased by 1.230 units. However, the value is insignificant at both 95% and 90% confidence limits. The insignificance in this study showed that, there is need for most of the companies to acquire more functioning vehicles in order to improve their performances.

Whereas, the coefficient ($B_5=0.776$) of X_5 indicates that a unit increases in the provision of road facilities, the performance (that is, turnover) will be increase by 0.776 units. The value is however insignificant at both 5% and 10% levels. The insignificant of this variable to the performance is an indication of inadequacy of these facilities in the study area. The respondents operations interviewed confirms that the state of the road was very poor in all the states..

Furthermore, exchange rate is an important variable and it is expected to contribute positively and significant to the nation's economy at large. However, this variable has a coefficient of – 0.331 which means that for every measure of increase in the rate of exchange, there is a decrease of 0.331 units in the performance (i.e. turnover) of public transport companies.

The coefficient of paratransit and non-motorized modes of transportation (X_7) that is ($B_7 = -0.304$) showed that, if paratransit increase by unit, the public transport earnings decrease by 0.305 units. The explanation for the above result is that, many people have preference for paratransit, such as motorcycles popularly known as *Okada*, express etc. thus make less use of public transport.

The variable X_8 , staff strength, has a coefficient of -0.115 ($B_8 - 0.115$). Thus for every increase in the strength of the staff with the public transport companies, there is an increase of 0.114 unit in the performance. This means that increase in the number of employee lead to a slight increase in the performance (turnover), which is not significant at 5% levels. This is also an indication that, unnecessary increases in the staff strength do lead to redundancy.

Finally, the coefficient ($B_9=2.06$) of X_9 shows that for every improvement on the organization structure, the performance of public transport companies increase by 2.06 units. The value is also significant at 10% level.

5. Conclusion

The result of the findings showed that, of the three functional forms of Ordinary Least Square (OLS) method of regression analysis fitted, linear function was chosen as the lead equation based on the R^2 , t and f - values. It was found out that cost of maintenance had coefficient of 1.999 and is significant at 5% level while organization structure is also significant at 10% level. Thus, it was concluded that cost of maintenance and organizational structure play prominent role in the performance of private transport companies in Niger State. This is line with the findings of Adesanya (2002) which established that the success of transport companies in third world nations is based on management concepts notably organizational structure and effective cost optimization.

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Table 1. Results of regression analysis

Forms of Equation	Regression Coefficients										R2	F-value
	Constant	X1	X2	X3	X4	X5	X6	X7	X8	X9		
Linear	-13.578	0.741 (0.30)	1.999 (2.12)**	1.480 (1.67)	1.230 (1.10)	0.776 (0.82)	-0.331 (-0.32)	-0.304 (-0.32)	0.115 (0.11)	2.06 (1.76)*	0.467	2.81
Semi Log	41.396	0.196 (1.20)	0.41 (2.56)	- -	-0.185 (-1.18)	- -	- -	- -	- -	0.276 (1.87)	0.335	4.518
Exponential	1.942	0.118 (0.67)	0.321 (1.86)*	0.163 (1.23)	0.163 (-0.96)	-0.143 (-1.57)	-0.228 (-1.29)	0.139 (0.31)	0.042 (-0.49)	0.067 (2.37)	0.325	0.415

t - value in brackets

** Significant at 5%

*Significant at 10%

Source: Data Analysis, 2005.

Table 2. Correlation Matrix of Variable Performance Of Public Transport Companies And Other Explanatory Variables

Variables	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9
Y	1.000									
X1	0.389	1.000								
X ₂	0.448**	0.810**	1.000							
X ₃	0.136	-0.166	-0.720	1.000						
X ₄	0.376*	0.498	0.392	0.056	1.000					
X ₅	0.139	-0.045	0.064	0.358	0.042	1.000				
X ₆	-0.386	-0.341	-0.348	0.015	-0.097	-0.141	1.000			
X ₇	0.945	-0.014	0.038	0.015	0.213	-0.032	0.032	1.000		
X ₈	-0.017	-0.165	0.026	-0.051	0.041	0.046	0.267	0.092	1.000	
X ₉	0.538*	0.412	0.377	-0.068	0.266	-0.047	-0.138	0.163	0.096	1.000

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

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

Source: Data Analysis, 2005.