EVALUATION OF VIABLE OPERATING STRATEGIES FOR PUBLIC TRANSPORT BETWEEN FUNAAB CAMPUS AND CAMP TERMINUS IN ABEOKUTA

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ABSTRACT

Transportation is a live wire for national development regardless of a nation industrial capacity, population or technological development. It gives expressions to policy initiative in areas like health, education, employment, etc., and in the absence of it, these facilities would be inaccessible. Viable operating strategies for public transport between Federal University of Agriculture, Abeokuta (FUNAAB), Ogun State Nigeria Campus and Camp Terminus in Abeokuta were evolved. Traffic study was conducted for seven (7) days to determine traffic volume and peak periods (morning and evening) along the route. Questionnaires were administered to the road users to obtain factors (availability of vehicles, travel time from Camp Terminus to FUNAAB, road condition, operational cost, comfortability of the vehicle) needed to generate operating strategies. These factors were subjected to statistical analysis. The traffic volume revealed that Private cab had the highest traffic flow for a.m. peak period (8: 00 – 9: 00 am) from Mondays to Thursdays while Public cab had the highest on Fridays to Sundays, and at the pm peak period (4:00 – 5:00 pm), Public cabs had the highest traffic volume on Wednesdays, Saturdays and Sundays while the Private cabs had the highest on the rest days of the week. The analysis of the sampled population showed that public cab had the least total time travel (36.1 minutes) followed by mini- bus (37.8 minutes) while the school bus had the highest (43.7 minutes) and this justified the reason why 40% of the population choose to travel by public cab, 33% by mini– bus and 27% by the school bus. However, for the viability of the operating strategies, more public cab and minibuses should be provided to ply the road because of their lesser travel time, also provision of more school buses because of the large number of passengers they carry per trip should be provided.

Keywords: Evaluation, Operating strategy, Transportation, Traffic volume, questionnaires

INTRODUCTION

Transportation is the main engine that drives the growth and development of societies, people and countries at large. The provision of transport facilities and services is indispensable as a means of conveying people, goods and information through places for the socio-economic and cultural integration of nations (Kingsley and Christopher, 2014) and political activities of a nation. Transportation improves spatial interaction, locational changes and integrates various regional spaces. (Somuyiwa *et al.*, (2011) and Oyesiku (2002), at different times also perceived transport as one of the elemental factors for any land use development pattern; it forms intrinsic part of settlement development neededto open up regions provides access to natural resources. According to Mustapha,

2017, a reliable and efficient transportation system is one of the key factors that play an important role in a region's economic growth by providing an adequate access which is a necessary condition for the efficient operation of manufacturing, retail, labour and housing markets.

It accelerates rural, urban and national development by making goods and services available to industry and consumers; creating opportunities for social and economic interaction and employment. Indeed, transport could be said to be the key means of giving expressions to policy initiative in areas such as health, education, etc. It gives life to development, *stimulates, improves human existence on earth and reduces distance for man's trips in space*(Gunnarson, 1998; Spaething, 1999; Oni, 2001; Atubi, 2006).

However, transportation problems remain one of the most worrisome in Nigeria today both in urban and rural areas. Among the most notable problems in Nigerian cities are long waiting times for buses, traffic congestion (especially both in the morning and evening peak periods), parking difficulties, air pollution,road traffic accidents (Asiyanbola 2007; Aderamo, 2010; Aderamo, 2012; Ashiedu, 2011) and inability to predict travel time. This results in daily loss of time and energy in various urban centres (Solanke, 2013). These problems could be minimized if there is adequate and proper transport system management. An efficient transport system would lower the cost and reduces the time of moving goods and service to where they can be used more efficiently (Edith, 2013). According to Atubi, 2010, Transport System Management (TSM) is described as making existing transport systems efficient as possible and provision for short-range transportation needs.

Federal University of Agriculture, Abeokuta (FUNAAB) and its environs as a community is not free of these problems as population increases on daily basis leading to influx of commuters demanding for the few vehiclesavailable during the peak periods. In order to minimize these problems, it is important that efficient traffic management measures in addition to other remedial measures like developing attractive public transport service as an alternative operating strategies are put in place (Banjo, 2008, Federal Government of Nigeria, 2010) to improve the traffic condition. This can be done when thorough understandings of the structure of the community and transport needs are properly evaluated.

Evaluation of alternative operating strategies is important to set out targets for the effective and excellence transport services to address the needs of potential road users. It requires an effective transport network to gives the public access the opportunities and benefits that contribute to better quality of life. Also, a thorough understanding of existing travel pattern is necessary for identifying and analyzing existing traffic related problems.
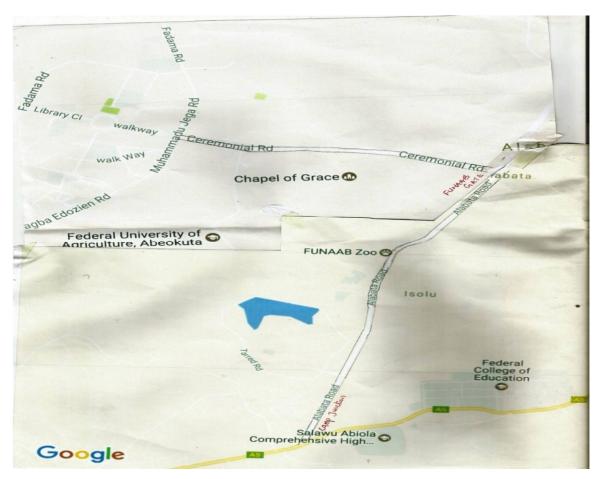
For an effective operating system, a good road network is necessary to enhance smooth ride thereby making planning ofa journey or predicting arrival time possible and reduce accident occurrence.

This paper therefore looks into the operating strategies for public transport services between FUNAAB and the Camp Terminus with a view to determining alternative strategies for effective services within the system.

MATERIALS AND METHODS

Study Area

The road evaluated in this study is anerstwhile which has been constructed over years. The road lies on the North – North South of Abeokuta, capital city of Ogun state in Nigeria. The road which is 4.5 km length away from FUNAAB ceremonial gate connects Federal University of Agriculture, Abeokuta (FUNAAB) Ogun State campus and Abeokuta – Ibadan express road at a T – intersection junction (Figure 1).

Figure 1: Route Location Map

Methods

Traffic study was conducted manually along the road for a period of 7 days that involved 12 hours daily counting (7:00 am to 7:00 pm) to determine the traffic volume (Average Daily Traffic). The traffic study was conducted at three major points along the study road:

(i) Camp Junction

(ii) Ogun – Oshun River Basin Development Authority Junction and
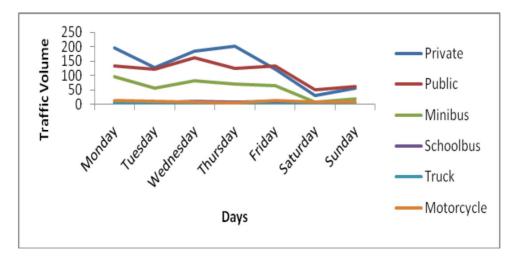
(iii) FUNAAB Ceremonial Gate

Peak hour was noted both in the morning and in the evening during the exercise be-

tween 8:00 - 9:00 a.m. and 4:00 – 5:00 pm respectively. Analysis of the total number of vehicles plying the road was done.

Oral interview was conducted for the populace and drivers who cannot read while questionnaire was used for other members of community who can read and write separately to obtain data such as transport fares, travel time, personal security and comfortability. Thereafter analysis was carried out and evaluation of the alternative operating strategies of the road was done to have a thorough knowledge and understanding of the pattern of traffic, congestion time of vehicles without passengers; passengers without vehicles, justification of the cost of operation of the service providers and frequency of operation.

The summary of the traffic count results are shown in Figures 2 and 3.The traffic counts revealed that Private cab had the highest traffic flow for a.m. peak period (between 8: 00 and 9: 00 am) from Mondays to Thursdays. This implied that other road users (public cab and school bus) were not many and possibly other community members who have no access to private vehicles would arrive late to their destinations within this period. But on Fridays to Sundays, Public cab had the highest traffic flow (Figure 2), and probably this could be due the fact that most road users with personal vehicles have gone for weekend holidays and very few public cabs have taken up the advantage to serve the community members who are without private vehicle.

RESULTS AND DISCUSSION

Traffic studies

Figure 2: Daily traffic volume trend during the morning peak period

Also, it was observed that after the a.m. peak hour (8 - 9 am), there were vehicles lying down without passenger and the rate at which public cabs operate got reduced. The operation of FUNAABOT bus services was observed to be between 8 and 10 am after which they park until the p.m. peak hour (4 - 6 p.m.) when they start the after-noon session of their operation. This period of operation ends at between 5 p.m. and 6 p.m. depending on the number of waiting passengers. At the pm peak period, Public cabs had the highest traffic count only on Wednesdays, Saturdays and Sundays while the Private cabs had the highest on other days (Figure 3).
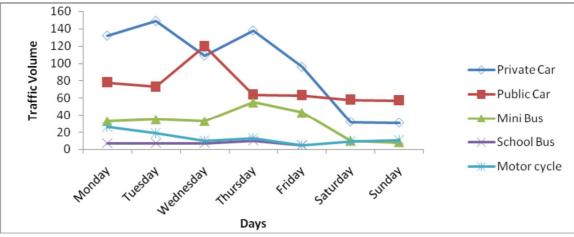

Figure 3: Daily traffic volume trend during the evening peak period

Generation of Alternative Operating Strategies

The waiting time (before the arrival of vehicles at Camp junction) and Travel time from Camp junction to FUNAAB were estimated as shown in Tables 1-2. Public cabs had the highest percentage both for waiting time (49.70%) (Table 1) and travel time (49%)(Table 2) while mini bus and school bus were 25.45% and 24.85% respectively for the waiting time (Table 1). But for the travel time, mini bus had the least value (22.48%) (Table 2).

Table 1: Estimated waiting Time before the arrival of vehicles at Camp junction

Total Time (minutes)	Public cab	Mini bus	School bus	Total	Percentage (%)
0 - 5	-	-	-	-	-
5 – 10	10	5	-	15	9
10 –15	25	18	10	53	32
15 –20	20	12	18	50	30
20 –25	12	7	8	27	17
25 –30	15	-	5	20	12
Total	82	42	41	165	100
Percentage (%)	49.70	25.45	24.85	100	

Table 2: Estimated Travel Time while on board from Camp junction to FUNAAB

Total Time (minutes)	Public cab	Mini bus	School bus	Total	Percentage (%)
0 - 5					
5 – 10					
10 –15					
15 –20	60	10		70	42
20 –25	21	15	22	58	35
25 –30	-	12	25	37	23
Total	81	37	47	165	100
Percentage (%)	49.09	22.42	28.48	100	

Table 3 presented the Total Travel Time per trip (Camp junction - FUNAAB – Camp junction). The statistical analysis re-vealed that public cab had the least travel time from Camp junction to FUNAAB (18.8 minutes) followed by the mini – bus (22.8

Table 3: Analysis of Total Travel Time per Trip (Camp junction – FUNAAB - Camp junction)

	Public cab (Minutes)			Mini bus (Minutes)			School bus (Minutes)		
	Mean	Standard deviation	Variance	Mean	Standard deviation	Variance	Mean	Standard deviation	Variance
Travel Time while on board (Camp to FUNAAB)	18.8	2.19	4.80	22.8	3.85	14.82	25.2	2.50	6.23
Waiting Time before vehicles arrived back at Camp	17.3	6.46	41.73	15	4.53	20.52	18.5	4.71	22.22
Total Travel Time	36.1			37.8			43.7		

But considering the waiting time for the vehicle to arrive back at Camp, mini – bus had the least (15 minutes) followed by the public cab (17.3 minutes) while the school bus had the highest value (18.5minutes).

The estimated total travel time revealed that public cab had the least total time of 36.1 minutes and this is justified by the questionnaire results, where 40% of the sampled population reported their choice of public cab for mode of transportation (Table 4)

because of its least travel time, its arrival and comfortability.

This leaves the average community member who has to be in FUNAAB between the hours of 8 and 9 am to be at the bus stop between 7 – 8 am.

Choosing between the mini bus and the school bus is left to when the public cab is not available or when cost is of higher consideration than time saving.

Table 4: Reasons for choice of mode of Transportation

Reasons for Choice of mode of Transportation	Public cab	Mini bus	School bus	Total	Percentage (%)
Short waiting time	23	12	-	35	21
Short travel time	33	20	-	53	32
Low fares	-	23	44	67	41
Comfortability	10	-	-	10	6
Total	66	55	44	165	100
Percentage (%)	40	33	27	100	

However, for an improvement in the transportation services, Table 5 gave the summary of the response from the community members.

Table 5: Questionnaire to improve Transportation services along Camp junction to FUNAAB

Suggestions	Respondents	Percentage (%)
Provision of more intra – campus transportation services (public cab, mini buses and buses)	77	46.67
Repairs of road	82	49.70
Provision of FUNAAB car park at Camp	6	3.63
Total	165	100

J. Hum. Soc. Sci. Crtv. Arts 2017, 12: 120-128

126

Based on the analysis of results obtained, the following provisions were made for viable operating strategies between FUNAAB campus and Camp Terminus in Abeokuta.

(i) Provision of more intra – campus transportation services (public cab and min-bus) to ply the road because their total time travel per trip is less.

(ii)Provision of more school buses because of the large number of passengers they carry per trip.

(iii) Repair of road from FUNAAB campus to Camp Terminus will also attract more commercial vehicles to ply the road and thereby reduce the waiting time for the arrival of vehicles at the bus stop.

CONCLUSION

Problems of the transportation system along this road are due to insufficient number of vehicles and distribution over time at the most demanding periods (a.m. and p.m. peak periods). It was discovered that various factors such as the road condition, low turnout by the road users during the off peak periods, few or no passenger from the university community during a.m. peak periods and to the university community during p.m. peak periods were responsible for low patronage of the commercial vehicles. Also, the total travel time influenced the choice of vehicle by the commuters as they preferred the vehicles with the least average total time. However, for the effectiveness of the transportation system on this road, it is suggested that more public cab and min-bus should ply the road because their travel time is less, provision of more school buses because of the large number of passengers they carry per trip andputting the road in proper condition should be done.

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