

## Quality Public Road Transport Service as an Effective Delivery Component of Supply Chain Process in Nigeria

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DOI: 10.56201/ijssmr.v9.no8.2023.pg87.102

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### **ABSTRACT**

*The Nigerian public transport system is a major delivery component of supply chain process. This research evaluates the quality of public road transport service in Nigeria, focusing on three key factors which are time, comfort and safety. Transport operators only focus on making profits and not on the satisfaction of the consumers. A statistical analysis was performed using the Reliability statistics test and opinions and attitudes were grouped using a Likert scale. It was observed that for attributes measured on a scale of 1 to 4, the mean rating was below 2, for attributes measured on a scale of 1 to 5, the mean rating was below 2.5 and for the attribute measured on a scale of 1 to 3, the mean rating was below 1.5 indicating that the expectation of public transport users are not met and the services are highly unsatisfactory. It was also further discovered that in 2004 the Federal Road Safety brought forth the RTSSS (Road transport Safety Standardization Scheme), which contains the rules and regulations that should govern every public road transport company. The data acquired for this research points to the fact that, the transport company owners in Nigeria do not follow up to twenty percent (20%) of the RTSSS guidelines. After these discoveries, this research goes further to giving recommendations to enhance the quality of service provided and move the Nigerian public road transport service further.*

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**Keywords:** Public; Transport; Quality; Road; Service

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### **1. INTRODUCTION**

Every single activity requires an effective strategy so as to produce efficient result; transportation is not an exemption to this rule. Strategy is a systematic set of plans which is used to move an idea forward and without strategy in any activity, there would be no improvement in that activity which in turn leads to poor service delivery. In Nigeria today, a close observation of how the operators of the public transport services carry out their business reveals that majority of them lack effective strategic planning in their operations Sameer, Wilhelm & Abdelnaser (2020).

In comparison to public land transport, the aviation sector appears to be more effectively managed, starting from time management, to customer service and satisfaction. One wonders why the operators of public land transport would not put similar efforts in its management like the aviation counterpart. A regular Nigerian citizen most likely respond that 'air transportation is more

prestigious than land transport, hence low expectation of treatment on public road transport over the aviation sector', showing poor knowledge of about the same transport function which only differ in the medium of carriage, (Obeng and Ugboro, 2006). This notion has been one of the major reasons why less effort is being put into making the public land transport system much more reliable, safe and comfortable than it is today, despite the fact that it is the most commonly used mode. The attention given to air transport makes it the safest way to travel (Shakib & Hossein, 2013).

A close observation of the operations of popular mass transit operators in Nigeria today leaves much to be desired. Most reputable transport services in Nigeria including PEACE MASS TRANSIT, G. AGOFURE Transport Service, MULTILINE Transport or ABC Transport, etc, give the impression of paying more attention to profitability at the detriment of the three major factors of time, safety and comfort, which should be the hallmark of public road transport, (Nwafor & Onya, 2019).

With the rising cases of insecurity in Nigeria coupled with poor road infrastructures, the mass transit operators are expected to put adaptive measures in place to safeguard their passengers. These problems need solutions for the public road transport operation in Nigeria to effectively play its role as the prime mover of the Nigeria populace in their enhancement of place utility (Kriti, 2020).

This brings to the fore the following questions:

- 1) To what extent is the quality of public transport in Nigeria affected by time management practice of the operators?
- 2) How much does the general insecurity and safety in Nigeria affect public road transportation?
- 3) What is the effect of comfort on public road transport and how can it be enhanced?

### **Objectives**

This study assesses the quality of service given by the public road transport companies in Nigeria. It will evaluate the quality of public road transport operation in Nigeria based on time management and how to further improve on it. The study will find out the extent at which general insecurity and safety affects public road transportation in Nigerian and evaluates the effect of comfort on public road transport in Nigeria.

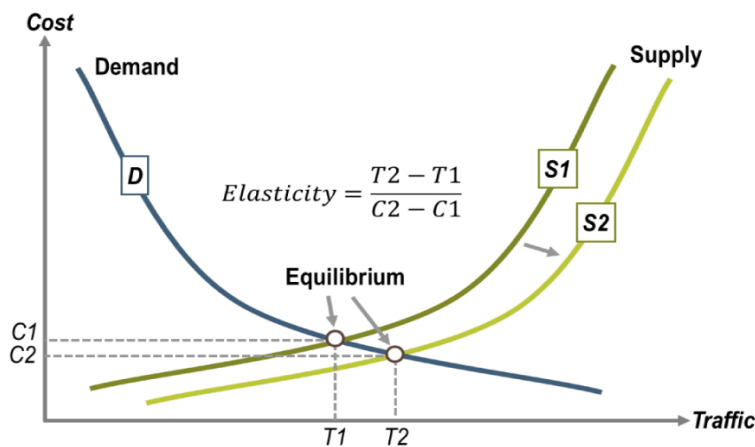
## **2. LITERATURE REVIEW**

Transport Demand Encyclopedia (TDM) (2015) produced by the Victoria Transport Policy Institute discussed concept related to transport demand. According to the TDM, transportation demand refers to the amount and type of travel people would choose under specific conditions, taking into account factors such as the quality of transport options available and their prices.

Jean-Paul and Notteboom (2020) discussed the concept of Transport Supply. Transport supply is the capacity of transportation infrastructures and modes, generally over a geographically defined transport system and for a specific period of time. According to them, Supply is expressed in terms of infrastructures (capacity), services (frequency), and networks (coverage) (JPER, 2015). Capacity is often assessed in static and dynamic ways where static capacity represents the amount

of space available for transport such as terminal surface, and dynamic capacity is the improvement that can be made through better technology and management (Jason Tindley (2017)). The number of passengers, volume (for liquids or containerization traffic), or mass (for freight) that can be transported per unit of time and space is commonly used to quantify transport supply. They went ahead and spoke on Transport demand saying, transport demand is mobility needs for the same period of time, even if they are only partially satisfied. Furthermore, transport demands, even if those demands are satisfied, fully, partially, or not at all. Similar to transport supply, it is expressed in terms of the number of people, volume, or tons per unit of time and distance (Kristian, 2018).

Jean-Paul and Notteboom (2020) explained the relationships between the transport supply and demand stating how mutually interrelated they are but also change continually. From the perspective of conventional economics, transport demand and supply interact until an equilibrium is reached between the quantity of transportation the market is willing to use at a given price and the quantity being supplied for that price level. Also, price changes not only affect the level of transport demand but can also lead to shifts of demand to other routes, alternative transport modes, and or other time periods.



### Standard transport demand/supply function

According to Holmes (2021), the nine theories that remain the principal of theories of planning procedure today: The rational-comprehensive approach, the incremental approach, the transformative incremental approach, the transactive approach, the advocacy approach, the equity approach, the radical approach, the humanist approach.

Tindley, (2017) maintained six principles of transport planning which include:

- **Improve Operational Efficiency:** The goal should be to choose the most cost effective and efficient solution to every problem. A strategy should be flexible and open to change, so as to be able to adapt to evolving circumstances.
- **Improve Customer Service:** A carefully managed plan can help you deliver improved service to your customers while simultaneously cutting operational cost.

- **Record Data:** Data should be recorded for all vehicle movements, stock and value, space utilization, employee actions and stock handling processes. Your transport strategy is blind without accurate recording.
- **Establish and Review Measurable KPIs (Key Performance Indicator):** Having a clear understanding of your goals, you should set out series of KPIs attached to each function, team and individual employee. These KPIs should be easily understood and measurable in financial terms.
- **Improve Environmental Sustainability:** Every logistic action has positive and negative impacts on the environment. Any transport plan should be mindful of the impact a logistics network has on the environment, mostly in terms of fuel use, and emissions.
- **Reduce Planning Time:** Planning like every other action uses resources, and has a monetary cost attached to it. Reducing time spent on planning without having to cut corners is the goal. Therefore, the use technology to increase your planning efficiency should be considered (Paul & Chatchai 2008).

Chatcha, (2008) in his research on conceptual framework for strategic planning in complex multi-business corporations, highlighted the need to understand how multi-level and multi-unit strategic planning processes are constructed, coordinated, integrated and aligned. He anticipated that when developed, would help multi-business corporations to manage and integrate their complex strategic planning much more effectively and flexibly. Shakib and Hossein (2013) carried out a research on “Role of strategic planning in transportation management to improve the performance of Transport Company” (Wikipedia, 2013 and 2019). With the use of qualitative evaluation which was carried out by a document analysis and questionnaire application, they came to a conclusion that strategic planning is an important tool that allows public transportation companies to meet people’s demand primarily in terms of accessibility and mobility.

Going beyond the primary demand of transport, strategic planning will also meet the demands of comfort and safety. They went further to state that a characteristic of effective strategic planning in public transportation companies is, strategic planning must be more than lip service, (Jason, 2017).

Obeng and Ugboro (2006) in their research of “The Characteristics of Effective Strategic Planning in Public Transit Systems”, using structural equations analysis from 54 transit agencies revealed that, strategic planning enhances a transit agency’s ability to respond effectively to federal legislative requirements and demands of host communities. They also stated that for strategic planning to be effective, it should receive more than lip service from top and unit or division level managers.

In a research (Dragan Pamucar et al., 2016) on strategic transport management models-The case study of an oil industry, the authors stated that transport is recognized as an important factor of sustainable development strategy, due to strong correlation between transport and economic and social development and particularly because of its impact on the environment.

Ekpudjuren (2013) in his research on “effective transportation planning implications for socio-economic development in Nigeria” saying, it is imperative to note that transportation is a key element and major driver of development economically and socially among other benefits. He also added that, with respect to the economy, efficient transport systems provide economic and social opportunities and benefits which results in positive multipliers effect such as better accessibility

to markets, employment and additional investments. He pointed out bad roads, fuel issues (high fuel price, shortage of fuel supply and consequential high transport cost), traffic congestion (long waiting time, bad driving habits), and inadequate high passenger capacity vehicles as some categories of challenges that could be seen. Also, Nwafor and Ezaka (2019) and Sumaila A.F. (2013) in their research on “Road Transportation Service in Nigeria: Problems and Prospects”. They also highlighted the problems in road transport operations in Nigeria as follows: Infrastructure: Poorly maintained roads, poor rural access and interchange facilities, poor road complimentary facilities; Vehicle which include Numerous small capacity vehicles, Old rickety vehicles; Operations which include Numerous operators, inadequate skill, increasing accidents and high fatalities and Policy/Planning which include Uncoordinated Road, Erratic funding.

The foregoing researches have pointed out the framework as well as the problems of public road transport service in Nigeria, and attempted to create a suitable and effective strategic plan which will create the way for the Nigerian public road transport service. This research looked at the quality of public road transport service in Nigeria.

### **3. METHODOLOGY**

This research aims at assessing the effect of these factors; time, safety and comfort on mass transit operation in Nigeria. This research covers both the literature and field survey.

This research concentrated on experienced drivers of public transport companies and regular users of the public transportation. The target audience was chosen from three (3) public transport companies in Warri, Delta state.

Random sampling was carried out to select users of the public transport service. To determine the sample size, the Taro Yamane method for sample size calculation was used. This method determines the sample size from a given population. Below is the mathematical illustration for the Taro Yamane method:

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n represents the sample size,

N represents the population under study

e represents the margin error.

A total of 220 passengers and 70 drivers were randomly selected from the 3 transport companies and the questionnaires were then distributed to them with the expectation that their feedback/responses will be extremely valuable to this research, thereby satisfying the study requirements with the acquired data. Based on the above population size, the sample size was 171. This research adopts a qualitative and quantitative statistical and logical technique to describe and evaluate data, regarding only completed questionnaires as suitable and valuable feedback. The respondents' attitudes and opinions were grouped using a Likert scale to ascertain the order of importance. The Likert scales include; Very satisfied, Satisfied, Neutral, Dissatisfied, very dissatisfied.

The frequency and percentage of the responses to the questions were grouped based on the Likert scales.

A further statistical analysis was performed using the Reliability statistics test to show users satisfaction with the quality of service offered by public transport service operators and the null and alternative hypothesis were tested.

The minimum and maximum values were used to draw inference.

Cronbach's Alpha was then used to show that the scale of the instrument for the study is internally consistent and reasonably free of measurement error (Keith S. Taber, 2017).

The field survey associated with a well-organized online questionnaire also the data for this study was gotten from public road transport users (passengers) and public transport operators (drivers) as they are first-hand users of the system.

Inferential and descriptive methods were however used to analyse the data obtained from the questionnaire. The result of this study was presented using percentages, tables and reliability statistics.

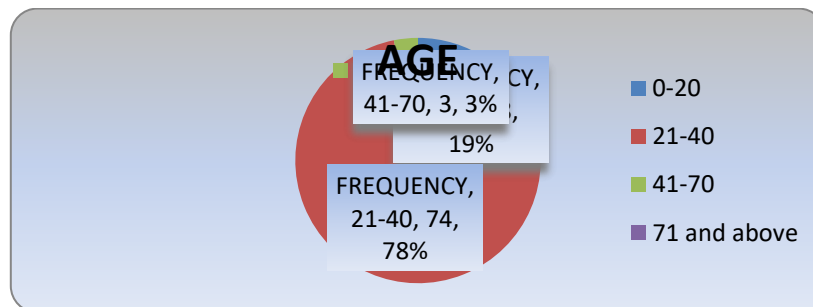
#### 4. DATA ANALYSIS AND RESULTS

##### Socio Demographic Analysis

**Table 1: Percentage Distribution of Passengers by Age**

Age group	Frequency	Percent	Valid Percent	Cumulative Percent
0-20	8	19	19	19
21-40	148	78	78	97
41-70	6	3	3	100
71 and above	0	0	0	100
Total	190	100	100	100.0

Source: Survey 2023



**Fig 1 Pie chart representation of Passengers by Age**

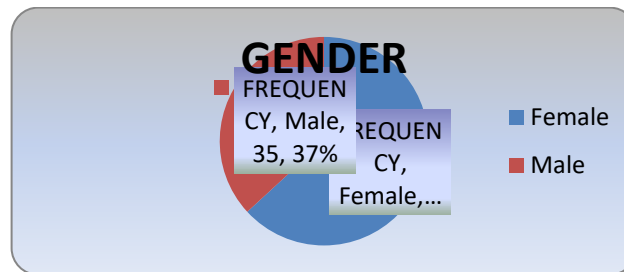
Table 1 presents the data of the respondents of the questionnaire who are also users or passengers of public transport system according to age. It is observed a greater number of the respondents (78%) fell between the age ranges 21-40. People of this age range can be classified as youths and are known as those that travel a lot and make use of public transport, so it can be said that the best set of respondents were used in this study.

**Table 4.2: Percentage Distribution of Passengers by Gender**

institutions

Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Male	120	63.2	63.2	63.2
Female	70	38.8	38.8	100.0
<b>Total</b>	<b>190</b>	<b>100.0</b>	<b>100.0</b>	

Field data collected (2023)



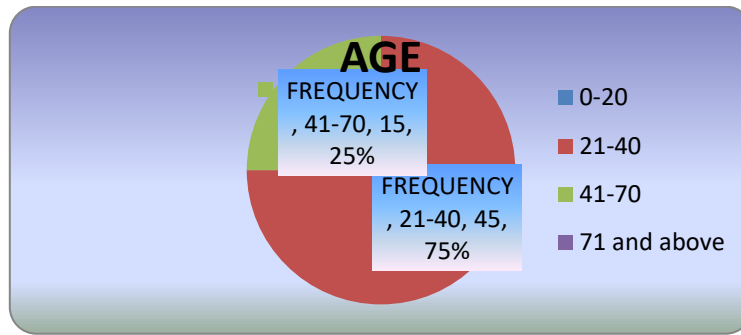
**Fig 4.2 Pie chart representation of Passengers by Gender**

Table 2 presents the data of the respondents of the questionnaire who are also users or passengers of public transport system according to gender. It is observed a greater number of the respondents (63%) are female while 37% are male.

**Table 3: Percentage Distribution of Public Transport Drivers by Age**

Age group	Frequency	Percent	Valid Percent	Cumulative Percent
0-20	0	0	0	0
21-40	45	75	75	75
41-70	15	25	25	100
71 and above	0	0	0	100
<b>Total</b>	<b>60</b>	<b>100</b>	<b>100</b>	<b>100.0</b>

Source: Survey 2023



**Fig 3 Pie chart representation of Drivers by Age**

Table 3 presents the data of the respondents of the questionnaire who are drivers according to age. It is observed a greater number of the respondents (75%) fell between the age ranges 21-40.

## 2 QUALITY OF PUBLIC ROAD TRANSPORT OPERATION IN NIGERIA

**Table 4. Passengers' Evaluation of the Quality of Public Road Transport Operation in Nigeria**

Question	Responses	Frequency	Percentage (%)
How good, reliable and satisfactory do you think the public road transport service in Nigeria is?	Excellent	2	1
	Good	28	15
	Fair	78	41
	Poor	82	43
On arrival at the bus terminal, how much waiting time is there before boarding the vehicle and commencing the journey?	No waiting time	2	1
	Moderate waiting time	88	46
	Excessive waiting time	100	53
On arrival at the bus terminal, when would you like to board the vehicle and commence on the journey?	Immediately	84	44
	Not immediately but not late	98	52
	Late	8	4
Would you prefer that there should be a specification on the exact time the vehicle will depart from the terminal	Yes	174	92
	No	4	2
	Maybe	12	6



How effective is the time management of public road transport companies in Nigeria?	Excellent	2	1
	Good	26	14
	Fair	80	42
	Poor	82	43

Field data collected (2023)

**Table 5 Drivers' Evaluation of the Quality of Public Road Transport Operation**

QUESTION	RESPONSES	FREQUENCY	PERCENTAGE (%)
Is there any rest period between the hours you drive?	Yes	18	30
	No	42	70
	Maybe	0	0
Does the company carry out any training exercise or safety lectures for its staff?	Yes	0	0
	No	60	100
	Maybe	0	0

Field data collected (2023)

Table 4. shows the opinion of Passengers on the quality of public road transport operation in Nigeria. It can be observed that a high number (84%) are of the opinion that in terms of reliability and satisfaction, the public road transport system operators perform fairly and poorly. When asked about time management too, more than half of the respondents (53%) mentioned that they spent excessive waiting time at parks before boarding the vehicle and commencing the journey. In summary, 85% of the respondents rated the effectiveness of the time management of public road transport companies in Nigeria as fair and poor. The views of the Drivers who work for these public road transport operators can be found in Table 4.5, about 70% of them stated that they do not get a rest period between the hours they drive. When asked if they undergo any training exercise or receive safety lectures from the company, all of them responded negatively. These laxities will definitely affect their efficiency and the quality of work they do.

### 3. Effect of insecurity on public transport operation in Nigeria

**Table 6. Passengers' Evaluation of the Effect of Insecurity on Public Transport Operation in Nigeria**

Question	Responses	Frequency	Percentage (%)
On a scale of 1 to 5, how safety conscious do you think the public road transport service providers are?	1	42	22
	2	48	25
	3	72	38
	4	22	12
	5	6	3
Do you think the current state of insecurity in Nigeria affects the safety standards of the public road transport service?	Yes	158	84
	No	18	9
	Maybe	14	7
Are you willing to adhere to the rules and regulations set by the transport service providers in order to promote safety?	Yes	182	96
	No	6	3
	Maybe	2	1

Field data collected (2023)

**Table 7. Drivers' Evaluation of the Effect of Insecurity on Public Transport Operation in Nigeria**

Question	Responses	Frequency	Percentage (%)
Do you think that the current state of insecurity in Nigeria affects the safety standards in the public transport sector?	Yes	36	60
	No	24	40
	Maybe	0	0
Do you think the company can improve its safety standards regardless of the state of insecurity in Nigeria?	Yes	48	80
	No	12	20
	Maybe	0	0

Field data collected (2023)

From Table 6, it can be seen that when asked to rate the safety consciousness of public road transport service providers on a scale of 1 to 5, majority of the passengers (85%) rated them 3 and

below which is a poor rating. 84% of the passengers were also of the opinion that the current state of insecurity in Nigeria affects the safety standards of the public road transport service. Table 4.7 shows the Drivers' responses on questions about insecurity, majority of the drivers (60%) agree that the current state of insecurity in Nigeria affects the safety standards of the public road transport service.

#### 4. Importance Of Comfort in Public Road Transport Services In Nigeria

**Table .8. Drivers' Evaluation of the Level of Comfort in Public Road Transport Service in Nigeria**

Question	Responses	Frequency	Percentage (%)
How satisfied are you with the compensation/pay from the company for your service?	Very satisfied	0	0
	Satisfied	0	0
	Neutral	0	0
	Dissatisfied	36	60
	Very dissatisfied	24	40
Would you like that there should be a specification on the exact time you are to commence a journey?	Yes	45	75
	No	15	25
	Maybe	0	0

Field data collected (2023)

**Table 4.9 Passengers' Evaluation of the Level of Comfort in Public Road Transport Service in Nigeria**

Question	Responses	Frequency	Percentage (%)
Rate the comfort of the Nigerian public road transport.	1	56	30
	2	54	28
	3	62	33
	4	16	8
	5	2	1
Do you think the service of comfort can be improved on?	Yes	170	90
	No	4	2
	Maybe	16	8

Are you willing to pay premium rates for comfort?	Yes	134	71
	No	16	8
	Maybe	40	21

Field data collected (2023)

Table 8. shows the level of satisfaction of the Drivers who work for public transport operators in Nigeria with the compensation/pay from the company for their service. When asked about the compensation/pay they receive from the company which is supposed to be a variable for measuring their level of comfort, it is observed that all the Drivers who responded to the questionnaire were either dissatisfied with their pay or even worse very dissatisfied with it as for the passengers.

Table 9 shows that when asked to give the comfort of the Nigerian public road transport a rating from 1 to 5 almost all (91%) of the passengers gave a rating of 3 and below which is a poor rating.

### 5. Reliability Analysis of Users Satisfaction with Service Quality Attributes

Null hypothesis = the time management practice of operators does not affect the quality of public road transport service, the general insecurity and safety in Nigeria has no serious effect on public road transportation in Nigeria, Comfort has no serious impact on public road transportation in Nigeria

Alternative hypothesis = the time management practice of operators affects the quality of public road transport service, the general insecurity and safety in Nigeria has a serious effect on public road transport in Nigeria, Comfort has serious impact on public road transportation in Nigeria.

**Table 10. Users Satisfaction with Service Quality Attributes**

Service Attributes	Minimum	Maximum	Mean	Standard Deviation	N
Reliability and satisfaction of service	1	4	1.74	0.402	190
Time management	1	4	1.73	0.393	190
Safety consciousness	1	5	2.48	0.558	190
Comfort of vehicle	1	5	2.23	0.517	190
Waiting time	1	3	1.48	0.552	190

\* **Minimum and Maximum value indicates lower and upper value of scale**

Table 10. shows a summary of the respondents (passengers) satisfaction with public transport service in Nigeria. The table shows the mean response of the various attributes considered. It is observed that for attributes measured on a scale of 1 to 4, the mean rating was below 2, for attributes measured on a scale of 1 to 5, the mean rating was below 2.5 and for the attribute

measured on a scale of 1 to 3, the mean rating was below 1.5 indicating that the expectation of public transport users are not met and the services are highly unsatisfactory.

This therefore shows that the quality of public transport in Nigeria is affected by the poor handling of these service attributes. From the survey, the conclusion was drawn that the time management practice of operators affects the quality of public road transport service, the general insecurity and safety in Nigeria has a serious effect on public road transport in Nigeria, comfort has serious impact on public road transportation in Nigeria

**Table 1.1 Reliability Statistics**

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.960	.974	5

The reliability and internal consistency of the survey instrument based on Cronbach's alpha analysis as seen in Table 11 is 0.960 which is greater than the accepted minimum value of 0.70. This indicates that the scale of the instrument is internally consistent and reasonably free of measurement error.

### **5. Conclusion and recommendations**

This research has revealed the quality of public road transport operation in Nigeria based on time management. The issue of time management in Nigerian transport service has negatively impacted on the operation and overall service quality as evident in the research work. Also issue of the general insecurity and safety in Nigeria truly affects the public road transport operations in the country. The efficiency of public transport also beckons on the safety and security of passengers and cargo as well as the motive power itself hence its quality operation. Basic safety rules and standards are poorly adhered to, even basic safety training standards such as holding safety training exercise for the drivers were poorly implemented. It was evident from the research that passenger comfort has a very huge impact on public transportation especially for long period journey; there is gross misplacement of profit to passenger comfort in Nigeria public transport service. Comfort as a major factor in public transport has been totally relegated to the background.

This research focuses on these three factors which are, time, comfort of passengers as well as their safety/security. After proving that the public road transport providers in Nigeria are not performing at an acceptable standard within the confined of these factors, recommendations were highlighted which include;

- Strict time regulation as it is done in the aviation sector. Scheduled dispatch of vehicles from the terminal at specific time would enhance the time conflict and also improve smooth operations.

- Investment in passenger comfort by public transport operators is highly recommended in this research. A unit luggage or cargo could be paid for in place of passenger position or investment on more haulage transport system. Better vehicles with enough leg room which is conducive for sitting for long hours is acceptable.
- Irrespective of the role the general insecurity and safety plays, the public road transport providers should put in place safety measures to the best of their ability to increase the safety standards. An inexperienced driver on the basics of safety standards is the first step to incidents and accidents, therefore, transport companies should hold regular safety training for its drivers. Basic road rules and regulations should be taught to the drivers in order to enhance the consciousness of safety during journeys.

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