



Incorporating Sustainability in the Abuja Transport Sector

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ABSTRACT

Incorporating sustainability in the transport sector is a goal that needs to be achieved on the global stage as a whole in order to meet the basic human needs with very limited resources available. Abuja is one of the currently developing cities in Africa. Though very small, it has a very high populace. With this high number of people also entails the use of hundreds of thousands of automobiles. This is very bad for the earth we live on as gas emissions and several forms of pollution bring great harm to it. The aim of the research is to come up with other ways of mobility around Abuja which are a lot more sustainable than the use of Cars, buses, motorcycles, etc. The first section addresses the major problems facing the transport sector in Abuja, along with the aim and objectives of the study. In the course of this study, qualitative and quantitative analyses were adopted. The quantitative analysis performed involved sampling that was conducted by sending out a questionnaire to the Federal Ministry of Transport, Abuja. The questions were mostly to determine if the adoption of rail transport and bicycles would be acceptable in Abuja. More so, responses from the staff of the earlier mentioned body were detailed and recorded. Meanwhile, results from this study revealed that 51 respondents representing 58.6%, unanimously signified that they would always use the Train; if properly channeled and comfortable Trains of International standard are made available for commuting within Abuja, they will always utilize their services. In addition, 32.2% of the respondents ticked personal cars as a mode of transport in the Abuja metropolis. Thus, emphasizing the need for other modes of transport for a sustainable transport system to be achieved.

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INTRODUCTION

Integrating sustainability in the transport industry connotes every means of transportation that is 'green' and has minimal effect on the environment. Sustainable transportation is also about balancing the current and future needs (Cidell, 2012). For instance, sustainable transportation includes walking, cycling, transit, carpooling, car sharing, and green vehicles (Haghshenas, & Vaziri, 2012). It is pertinent to say that sustainability is an urban development priority. Therefore, energy and carbon dioxide emission reduction is becoming more important in the sustainability of transportation systems (Black, 2010). However, urban transportation systems such as Lagos, Abuja, Kano, Warri, among others are complex and involve social,

economic, and environmental aspects. Various low-carbon transport methods can help realise other economic, social and environmental goals. These comprise of improving access to mobility, reducing traffic and parking congestion, increasing public health and safety, supporting economic development, and minimizing air and noise pollution (Miller, 2014).

Taking into cognisance the possible economic, social and environmental advantages of sustainable transport, it is a win-win situation for climate protection and development goals to the shift towards a low-carbon pathway of this sector (Litman, 2013). The transportation sector in Abuja and even Nigeria as a whole is not multimodal as it incorporates mainly road transport more than



any other form of transportation for the regular day to day socio-economic activities of the city. As of Today, Road transportation covers over 95% of the whole transportation sector, which is very alarming (Christopher, 2005). There are several problems with the ongoing development of the Transport sector in Abuja, which would likely pose issues to the future activities of the environmental, social, and physical aspects of our day to day lives (Paul, 2013). Some of these problems are;

- i. Large number of personally owned vehicles due to lack of alternatives
- ii. High Carbon emission due to large number of vehicles on roads
- iii. High amount of road accidents due to large traffic numbers
- iv. Long waiting hours of passengers for the small number of available public buses which leads to loss of property, stampedes and also lateness for work, all in the process of waiting.
- v. Overcrowding
- vi. High number of vehicle breakdowns due to lack of proper maintenance.

The first Master Plan for Abuja was conceived in the late 1970s and advancement of the new Nigerian capital started in the mid-1980s. Today Abuja is one of the fast-developing cities in the world. Its development cannot just be identified in the city itself, but additionally in the abutting satellite towns and settlements (Nwankwo, Fawohunre, & Obasanjo, 2016). The pace at which Abuja the Federal Capital Territory is developing, there is a need to integrate sustainability into the transport sector to mitigate the long-run negative effect (Atubu, 2013). The fast urbanisation of Abuja has prompted the misfortunes of green land, shortage of settlement, deficiency of transports for mass transportation, ceaseless absence of influence flexibly, debasement of air quality because of contamination, increment crime percentage, solid waste production, contamination of water and land, expanded traffic, and helpless general wellbeing (Adeniran, 2018). According to Paul (2013), the average person walks for at least 2-4 km before getting to the nearest junction where he/she will get a public bus to get to work. Also, he/she waits for the bus for an average time of 40-50 mins before one becomes available. This is the primary reason

why an average Nigerian saves up enough money to buy a readily functional car to use for the day-to-day activities (Paul, 2013). The rapid growth in population is also a factor that leads to the increase in vehicles that roam the streets of Abuja. If the existing situation continues to develop in this direction, within the next decade, Abuja being the capital (as it attracts people enough as it is) will likely be so populated that all streets might become accustomed to heavy traffic every day.

The Review of the Abuja Master Plan managed different central parts of the city's turn of events and comprised of three fundamental segments: the survey of the urban structure of the Central Area of Abuja; an all-inclusive strategy for a satellite town in Abuja North-west and the Transportation Study for the open transportation frameworks with regards to the metropolitan territory (FCDA, 2008). This investigation introduced a complete outline of the measures, lines and segments required to build up an incorporated and feasible open transportation foundation framework integrated with the National Railway, territorial suburbanite rail, the Abuja City Mass Transit System, and transport administrations. This study however, seeks to assess the incorporation of sustainability in the Abuja transport sector. Notwithstanding, the aim of this study is to examine and analyse the sustainable transport measures that can be incorporated into the Abuja transport sector. This aim can therefore be achieved by completing the following set of objectives.

The specific objectives are to.

- I. Analyse the current trends in the Abuja Transport sector.
- II. Compare the International and Local policies regarding sustainability in the transport sector.
- III. Survey stakeholders and analyse the acceptance of sustainable transport measures in Abuja.

REVIEW OF RELATED LITERATURE

For any economy, transportation is the engine of growth and development. Transport's importance or relevance is of immense interest, usefulness as well as irreplaceable in respects to the economy's growth and development. Transport has a pervasive impact on modern society. This is particularly due to the boom of vehicles and



population growth in Nigeria, which is currently estimated at approximately 202 million people. Economically, this is quite significant (Okereke, 2021). Transportation has effects on society and culture; it influences our lifestyles. Previous journals, reports, articles and literature from past authors, writers and scholars will be analysed in this section on integrating sustainability in the Abuja transport sector. According to Adefila & Bulus, (2014), the development that meets the needs of the present without compromising the ability of future generations to meet their own needs, is commonly defined as sustainable development. Many areas of engineering, including transportation engineering have adopted this concept. This is evident in the fact that a growing number of agencies have begun to define "sustainability" for transportation systems. Additionally, they are attempting to ingrain the concept into the planning process of regional transportation (Adeniran, 2018).

Transport that is cost-effective and continuously responsive to change in demands meets the need of Economic and Financial sustainability (Black, 2010). The premise of Environmental Sustainability assumes that transport has adverse effects on the environment. The design of programmes and the transport systems in general should explicitly address these preconceptions (Chan, et al., 2013; Samuel and Adetayo, 2018). Black (2010) posits equity is the main concern Social Sustainability. It focuses on implementing transport strategies that provide the lower class with better physical services. Additionally, consumer satisfaction is paramount to creating a social sustainable transport system. Mitton (2014) advocates integrated inter-modal transport system. In this case, rather than transport operating discretely in an uncoordinated manner, it becomes organic and functioning in synergy. This necessitates provision of infrastructure that enables the integration of any appropriate mode including cycle with linking mechanism within the system (Mitton, 2014).

According to Mishra et al., (2013) it is difficult to directly measure sustainability and sustainable transportation. Therefore, various performance indicators are used to evaluate them. Some are relatively limited, focusing on impacts like air pollution emission, social and environmental objectives. Jenny (2013)

suggests that, in order to achieve accessibility in a sustainable way, having a good and frequently used public transport system is necessary. He also noted that public transport needs to consider that pedestrians and cyclists are prerequisites for transportation in a larger city. According to Osayomi (2013) modern society cannot survive without transportation. However, it has also been argued that the provision of public transport services in large cities of developing worlds rarely does much to meet the travelling needs of the population, especially that of residents in low-income areas (Oraegbune et al., 2015). Road-based public transport in developing world cities like Abuja, is dominated by medium-sized vehicles like vans, mini-buses, and full-sized buses (Oniyangi, 2012), and the services rendered are generally inadequate. Adhering to safety standards, security, comfort, convenience, regularity, punctuality (where schedules apply), reliability, and speed are not encouraging (Osayomi, 2013). According to Oyedele (2012), the general public is not quite satisfied with the quality of public transport in many developing countries.

The following scarcities in public transport were identified by Cidel (2012) to be widely complained about by commuters; location inconvenience and frequency of services; key origins service deficit and destinations; fear of crime at stations and within public transport vehicles; subpar safety with respect to roadworthiness of public transport vehicles and ability of drivers; poor time management, i.e., service is much slower than private vehicles, this is due to frequent stops; uncomfortable rides due to overloading of vehicles; poor-quality or non-existent infrastructure (e.g. unclean vehicles, lack of shelters, etc.); Unorganised system structure, poor mapping make the systems difficult to use; and low to inexistent status of public transit services. Although buses play a vital role in any urban area, their services are often insufficient to cater for demand and thus the services provided mostly suffer from low output (Atubu, 2013). In many parts of the world, the lack of satisfaction derived from the services of public transport greatly drives individuals to buy and use private vehicles. For example, the findings of Theis (2012) in an attitudinal survey in the UK showed that 41% of private car users would reduce their car usage if public transport



became frequently available and reliable. Improvement in transport system can have a favourable effect on land development (Schiller, Bruun & Kenworthy, 2010). The authors further explain that high quality of public transport system can greatly improve the accessibility of its catchment area by shortening time.

Ramani et al. (2011) made a point that in many countries of the world, public transport systems are being heavily invested on to make them more competitive regarding other means of transport. Nevertheless, an increase in supply (qualitatively or quantitatively) will not directly lead to a resultant increase in demand and satisfaction (Miller, 2014). To be certain that investment really attracts both the existing and the potential customers envisaged, policymakers and operational managers in public transport should be provided with valuable information such as data of satisfaction and service performance (Litman, 2013). Haghshenas & Vaziri, (2012) maintained that economic development can be assessed using the transportation system as a reliable indicator. This is because the transport system works as a factor that encourages economic growth by providing employment, improving the efficiency and effectiveness of other businesses and also contributing to national investment and development (Haghshenas & Vaziri, 2012). Invalidating the above, Bhandari (2011) emphasised that public transport plays a social role in the urban environment: access to workplaces and service infrastructure is greatly improved while at the same time, cutting commuting costs. Both transport operators and public authorities are convoluted in policy formulation and implementation with respect to transport services. Since public authorities and transport operators do not have aligning goals, regulation plays a vital role, especially, failing competition (Bongardt, et. al., 2011). Sustainability in transportation is a highly regarded necessity due to triple bottom line impacts - indicators allow impacts of transportation to be recognised and measured and can be used as a basis for policymaking (Bongardt et. al., 2011).

The concept of 'holistic' sustainability has been applied in literature, including: Haghshenas & Vaziri (2012), and Miller (2014). These studies embody a cross-section of

literature that sees sustainability analysis as a problem with multiple criteria that can be quantified and understood. These studies use analysis that simplifies aspects of sustainable transportation into sets of different criteria and evaluate these criteria in order to better understand the sustainability and shortcomings of the system or problem being analysed. Haghshenas & Vaziri (2012) presented a study of the transportation systems of cities from a holistic sustainability lens. Miller (2014) answered the question of measuring the sustainability performance of public transit systems by directly applying CSI techniques, which is at the heart of this review. This analysis develops the public transit sustainable mobility assessment project (PTSMAP) framework to help in measuring sustainability and understanding the overall sustainability performance of public transit. The tool outlines two ways of applying CSIs to understand public transit: plan assessment and performance assessment. Planning assessment's main focus is on identifying potential sustainability benefits of a proposed public transit alternative. On the other hand, performance assessment focuses on characterising an existing transit system's sustainability performance based on previous data. This tool was used in a planning study from Vancouver, Canada. As well as, against heavy rail systems and major LRT in the USA using the National Transit Database. The results validated how 16 sustainability indicators could be used to develop a set of composite indicators (environmental, social, economic, effectiveness) and one CSI. The USA rapid transit systems were analysed and used to assess relative comparison of LRT and heavy rail modes – this includes the development of performance tier classification for rapid transit sustainability. This analysis also analysed how three normalisation techniques (z-score, min/max, distance to maximum) affects how CSIs are calculated. Additionally, the Vancouver case study showed how CSI methodologies can be used in conjunction with existing planning processes to provide fresh insight into how potential systems can perform.

RESEARCH METHODOLOGY

Data for the study was collected from the Federal Ministry of Transport in Abuja. Data for the survey was gathered using a



standardised questionnaire prepared for the study. The questionnaires were self-administered and were close-ended questions in five (5) parts. In order to guarantee that perhaps the research tools are specifically defined and give all respondents the very same insight and understanding, the survey was pre-tested. Imelda (2014) argues that before the final test, pre-testing allows fine-tuning.

Thus, the researcher carried out a reliability test of the research instrument with some employees purposely selected. This effort helped to identify some flaws in the questionnaires and thus was rectified accordingly. The purpose of the study was

again explained, and they were reassured of confidentiality of the information to be received. The respondents were also assured that no risk involved in participating in the research and that the research is solely for academic purposes.

The population for the study included Management Staff of the Federal Ministry of Transportation, Abuja. The population of 125 was restricted to Senior Staff, Middle Level Staff and Junior Staff of the Ministry. They form the units of analysis for this study and their nature is determined by the survey objective. The breakdown of the Federal Ministry of Transportation Staffs illustrated in Table 3.1;

Table 3.1a: Federal Ministry of Transportation Staff

S/N	CATEGORY	POPULATION	%
1	Senior Staff	49	39.2
2	Middle Level Staff	43	34.4
3	Junior Staff	33	26.4
	TOTAL	125	100

Source: Filed Survey, 2020

Taro Yamane formula was used to determine the sample size as follows:

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

Where n = sample
N=Population
E=level of significance or error =0.05
or 5%
1=Constant

$$n = \frac{125}{1+125(0.05)^2}$$

$$n = \frac{125}{1.125(0.0025)}$$

$$n = 95$$

The sample size of the study as determined from the population of the study (125) is 95

Table 3.1b: Federal Ministry of Transportation Staff

S/N	CATEGORY	SAMPLE SIZE	%
1.	Senior Staff	35	36.8
2.	Middle Level Staff	33	34.7
3.	Junior Staff	27	28.4
	TOTAL	95	100

Source: Filed Survey, 2020

In selecting the sample size, the sampling technique refers to the technique adopted by the researcher. It is broadly classified into a method of probability or non-probability sampling. The non-probability sampling method was selected for this study. The researcher used quantitative method to be able to choose respondents from highly regarded groups of units of the selected

population, which is a form of nonprobability sampling.

In analysing the data collected using the questionnaire; the researcher used the simple percentages method of data analysis. The analysis was represented in tabular form for easy understanding and it consist of respondents and the corresponding percentage and chi-square formula was used

as the statistical tools for testing the data base on two independent random samples.

The test statistical thus becomes;
 Chi-Square:

$$X^2 = \sum \frac{(o_1 - e_1)^2}{e_1}$$

Where o_1 = observed frequency
 e_1 = expected frequency

This test is based strictly on the primary data gotten from the use of questionnaire.

Decision Rule: Reject Null Hypothesis if calculated value of (X^2) is greater than the critical value and accept Null Hypothesis if the calculated value of (X^2) is less than the critical value.

The Degree of freedom = $(n - 1) (k - 1)$

Where Df =Degree of freedom
 n = number of rows
 k = number of columns

The questionnaire used for this study was thoroughly scrutinised by (the) project supervisor for clarity, precision, and comprehension. In the words of Ballington, & Kahane, (2014) Reliability is described as

being concerned with internal consistency; that is, in repeated trials, whether data collected, measured or generated is the same. To determine how consistent the instrument (measures) what it is designed to measure, the researcher used test-retest techniques and the result confirm that the respondents remained consistent in their answers.

Thus, the reliability of the instrument was established, and its reliability was tested using trail test. The reliability coefficient of the test was determined using Spearman Rank Order Correlation Statistics which was found to be 0.81.

RESULTS AND DISCUSSION

This section presents the results of the data that was generated from the administered questionnaires and interviews conducted. In doing this, the researcher employed tables and percentages at appropriate places to make the analysis very simple and understandable. A total number of One hundred and twenty-five (125) respondents representing the population size, but because of time and financial constraints, a total number of ninety-five (95) respondents were selected as the sample size using the Taro Yamane formula.

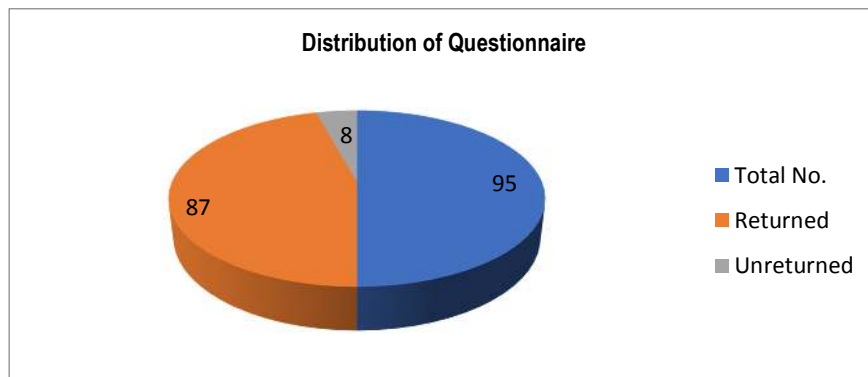


Fig 4.1: Chart for Questionnaire Distribution

From the data in Fig. 4.1, it was observed that the total response rate of eight seven (87) respondents out of the ninety-five

(95) questionnaire is adequate to achieve a balanced analysis of the problem.

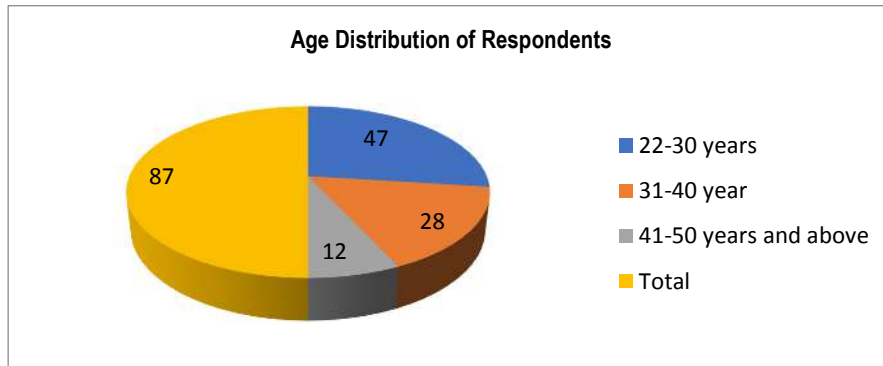


Fig 4.2: Chart for Age Distribution

The chart in Fig. 4.2 reveals that the age between 22-30 years had 54%, between

31-40 years had 32.2% while 41- 50 and above years had 13.8% of the total respondents.

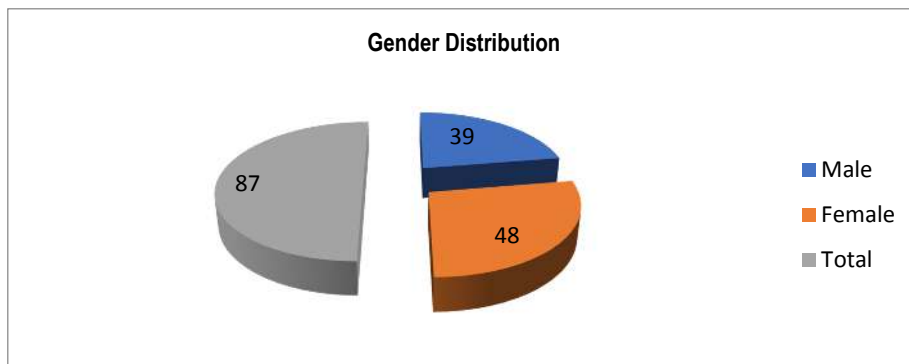


Fig 4.3: Chart for Gender Distribution

From the chart in Fig. 4.3, thirty-nine (39) of the respondents representing 44.8%

were male while forty-eight (48) respondents representing 55.2% were female.

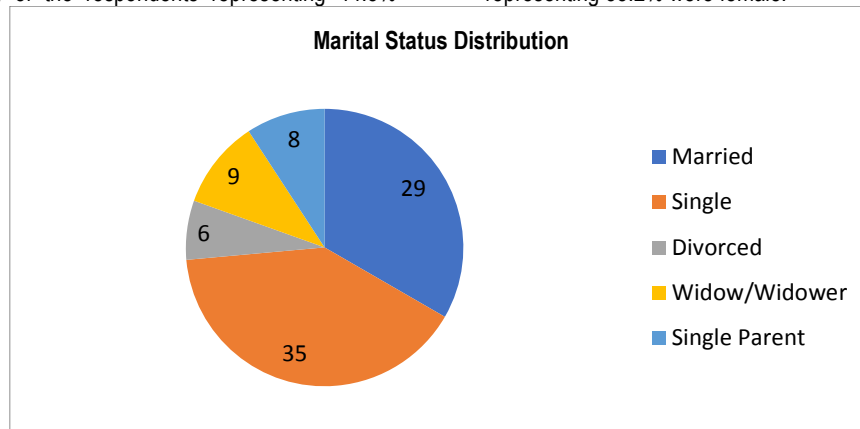


Fig 4.4: Chart for Marital Status Distribution



From the chart in Fig. 4.4, twenty-nine (29) of the respondents representing 33.3% were married, 35 of the respondents were

single, 6 of the respondents were divorced, 9 of the respondents were single parents, and 8 of the respondents were widows and widowers.

Table 4.1: Distribution of Respondents according to academic qualification

Option	Frequency	Percentage %
FSLC.	0	0
OND/NCE	22	25.4
HND/B.SC	29	33.3
Master	27	31
PhD	9	10.3
Total	87	100

Source: Field Survey, 2020

Table 4.1 shows that none of the respondents joined the organisation with First School Leaving Certificate (FSLC), 22 or 25.4% of the respondents had OND/NCE

certificate, while 29 or 33.3% of the respondents had HND/B.Sc., 27 or 31% of the respondents had Masters and 9 of the respondents had PhD.

Table 4.2: Distribution of Respondents according to positions

Option	Frequency	Percentage %
Level 6-9	33	38
Level 10-12	32	36.7
Level 13 and above	22	25.3
Total	87	100

Source: Field Survey, 2020

However, respondents between level 6 to 9 were 33 representing 38%, respondents between levels 10 to 12 were 32 representing 36.7% and respondents between levels 13 and above were 22 representing 25.3% (See Table 4.2).

The finding showed the need for the questionnaire to be used to analyse and

evaluate the respondents' opinions. The use of the proportion was designed to carry everyone along, particularly those with machine learning difficulties in understanding the assessment of respondent's responses. The following study questions were raised.

Table 4.3: What mode of transport do you use to commute within Abuja?

Option	Frequency	Percentage %
Personal Car	28	32.2
Bus	32	36.8
Walk	2	2.3
Bicycle	4	4.6
Motor Cycle	15	17.2
Uber	6	6.9
Others	0	0
Total	87	100

Source: Field Survey, 2020

Table 4.3 shows that 28 respondents representing 32.2% ticked personal car as mode of transport with Abuja, 32 respondents ticked bus, 2 respondents ticked Walk, 4 of the

respondents ticked bicycle, 15 of the respondents ticked Motorcycle, and 6 of the respondents ticked Uber.



Table 4.4: I know what sustainability in the transport sector is all about.

Option	Frequency	Percentage %
Strongly Agreed	50	57.5
Agreed	29	33.3
Undecided	2	2.3
Disagreed	2	2.3
Strongly Disagreed	4	4.6
Total	87	100

Source: Field Survey, 2020

Moreover, Table 4.4 shows a total number of 50 respondents representing 57.5% that strongly agreed that they know what sustainability in the transport sector is all about

29 respondents agreed to this assertion, 2 of them were undecided, 9 of the respondents disagreed and 4 of the respondents strongly disagreed.

Table 4.5: If properly channeled and comfortable Trains of International standard are made available for commuting within Abuja, how often would you utilize their services?

Option	Frequency	Percentage %
Always	51	58.6
Frequent	29	33.4
Sometimes	4	4.6
Never	3	2.4
Total	87	100

Source: Field Survey, 2020

The data analyzed in Table 4.5 shows that 51 respondents representing 58.6% ticked always that if properly channeled and comfortable Trains of International standard

are made available for commuting within Abuja, they will always utilize their services, 29 respondents ticked frequent, 4 sometimes, and 3 respondents ticked never.

Table 4.6: What is your reason?

Option	Frequency	Percentage %
Safety	44	50.6
Convenience	33	38.0
Cost	5	5.7
Environmental Conscience	5	5.7
Other Specify:	0	0
Total	87	100

Source: Field Survey, 2020

Also, 44 of the respondents' ticked safety as their reason for using Train if made available, 33 respondents ticked convenience,

5 of the respondents ticked cost and another 5 ticked environmental conscience (See Table 4.6).

Table 4.7: What would encourage you to adopt the use of trains if made available?

Option	Frequency	Percentage %
Lower cost	52	59.8
More train stations/stop	30	34.5
Incentives such as snacks, Wi-Fi etc.	5	5.7
Other specify;	0	0
Total	87	100

Source: Field Survey, 2020



The analyzed data from Table 4.7 shows that 52 respondents representing 59.8% stated that lower cost would encourage them to adopt the use of Trains if made available, 30 of

the respondents stated that more train stations/stop, 5 respondents stated that incentives such as snacks, Wi-Fi.

Table 4.8: International Policies on transport sector are better formulated and implemented than the Local ones.

Option	Frequency	Percentage %
Strongly Agreed	72	82.8
Agreed	7	8
Undecided	4	4.6
Disagreed	3	3.4
Strongly Disagreed	1	1.2
Total	87	100

Source: Field Survey, 2020

It was observed from Table 4.8 that a total of 72 “strongly agreed” that International Policies on transport sector are better formulated and implemented than the Local

ones, 7 of them ticked “agreed”, 4 ticked “undecided”, 3 disagreed and 1 of the respondents ticked “strongly disagreed”.

Table 4.9: The Federal Ministry of Transport has a significant role to play in improving the sustainability of Abuja transport sector.

Option	Frequency	Percentage %
Strongly Agreed	51	58.6
Agreed	28	32.2
Undecided	1	1.2
Disagreed	5	5.7
Strongly Disagreed	2	2.3
Total	87	100

Source: Field Survey, 2020

More so, 51 respondents representing 58.6% strongly agreed that The Federal Ministry of Transport has a significant role to play in improving the sustainability of Abuja transport sector, 28 of the respondents

also agreed to this statement, only 1 of the respondents was undecided, 5 respondents disagreed and 2 of the respondents strongly disagreed (See Table 4.9).

Table 4.10: What would encourage you to adopt the use of bicycles if made available?

Option	Frequency	Percentage %
More Bicycle Stands	13	14.9
More Bicycle rental services across town	41	47.1
Cost	21	24.1
Extensive Bicycle Routes	12	13.9
Other Specify:		
Total	87	100

Source: Field Survey, 2020

From the data presented in Table 4.10, 13 respondents representing 14.9 ticked more bicycle stands as what would encourage them to adopt the use of bicycles if made

available, 41 of the respondents stated that more bicycle rental services across town is what would encourage them to adopt the use of bicycles if made available, 21 of the



respondents ticked cost and 12 of the respondents ticked extensive bicycle routes.

DISCUSSION OF FINDINGS

The followings emerged from the study based on the data collected, presented, analyzed and interpreted. For instance, what impact would the availability of properly channeled Train network within Abuja have on sustainable measures of the transport sector? The data analyzed in table 4.5 revealed that 51 respondents representing 58.6% unanimously signified that they would always use the Train if properly channeled and comfortable Trains of International standard are made available for commuting within Abuja, they will always utilize their services.

Regarding the question on what effect would the adoption of International policies rather than domestic policies have on the people of Abuja and also the sustainability of the transport sector? It was found from table 4.8 that a total of 72 "strongly agreed" that International Policies on transport sector are better formulated and implemented than the Local ones. This means that there is a need to improve on the domestic policies in the Transportation sector in Nigeria. This was in line with the literature review where Pradhan & Bagchi, (2013) described sustainability assessment as a process of exploring the implications of existing policies, plans, programs, projects, or pieces of legislation, or existing practice or activities on sustainability.

Finally, on the question which focused on the likely impact of adopting the use of other transportation modes in sustainability, health outcomes of individuals and environmental effects in Abuja, It was revealed from table 4.3 that those 28 respondents representing 32.2%, ticked personal car as a mode of transport with Abuja, 32 respondents ticked bus, 2 respondents ticked Walk, 4 of the respondents ticked bicycle, 15 of the respondents ticked Motorcycle, and 10 of the respondents ticked Uber. Furthermore, it was found that 44 of the respondents ticked safety as their reason for using Train if made available, 33 respondents ticked convenience, 5 of the respondents ticked cost and another 5 ticked environmental concerns. This was in line with Pradhan & Bagchi (2013), who retained that technological advancement led to improved safety and travel

speed; it also helped to reduce most of its damaging effects. This development is traceable to the continued growth of demand and transport supply. Furthermore, the quality of transport goods has been improved with containerization.

CONCLUSION

As seen from the study, integrating sustainability in the transport industry connotes every means of 'green' transportation and has minimal effect on the environment. Sustainable transportation is also about balancing current and future needs. For instance, sustainable transportation includes walking, cycling, transit, carpooling, car sharing, and green vehicles. It is pertinent to say that sustainability is an urban development priority. Therefore, energy and carbon dioxide emission reduction is becoming more important in the sustainability of transportation systems. However, urban transportation systems such as Lagos, Abuja, Kano, and Warri, among others, are complex and involve social, economic, and environmental aspects. In addition, various low-carbon transport methods can help realize other economic, social and environmental goals. This includes promoting access to transport, reducing congestion in traffic and car parks, encouraging sustainable growth, improving public health and safety, and reducing air quality and excessive noise.

However, urban transportation systems such as Lagos, Abuja, Kano, and Warri are complex and involve social, economic, and environmental aspects. Various low-carbon transport methods can help realize other economic, social and environmental goals. This includes promoting access to transport, reducing congestion in traffic and car parks, encouraging sustainable growth, improving public health and safety, and reducing the quality of the air and excessive noise. As stated from the first section of this research, one main aim was stated along with a set of objectives to achieve the said aim. The objectives that were clearly stated from the onset and how they were followed to achieve the main goal are distinctively listed below;

The current trends in Abuja's transport sector were investigated and analyzed to highlight the major problems the city faces. This was carried out by conducting thorough research of past texts. Another thing



that helped was the author's familiarity with the nature of Abuja and what modes of transport are utilized most.

Local policies were also compared to international policies to study which of the two is the most effective in achieving sustainability, and international policies were deemed the most effective in meeting the stated goal. This was also determined by thorough research, and the questionnaire that was handed out solely with regard to this research produced valuable data, which further proves this point.

Valuable stakeholders were carefully surveyed, and the most sustainable transport measures in Abuja were analyzed and stated in the above text. This was determined by sending out a questionnaire to the Federal Ministry of Transport in Abuja, answered by individuals who are very familiar with the problems hindering achieving sustainability. This reaped valuable data that was properly analyzed and shown through various tables and charts pictured above.

To sum up, sustainability believes that transportation has a substantial environmental impact and that such impacts should be clearly discussed in the design of policies and structures in turn.

RECOMMENDATIONS

The following recommendations were proffered based on the findings of the study;

1. Better Policies: Nigeria should formulate better policies such as the ones overseas, to ensure sustainability in the transportation sector. This will ensure safety and impact on the entire environment.
2. Various Modes of Transportation: Although the railway project is ongoing, there is a need to expedite action to have sub railways stations in Abuja to provide additional modes of transportation.
3. Better Infrastructures: There is a need for the Federal Ministry of Transportation and the Federal Ministry of Works to collaborate in executing projects targeted at better transport infrastructures. For instance, no sideways or pedestrian road will enable individuals who want to walk to their office or places to do that without the fear of vehicles hitting them. In addition, there are no bicycle lanes in various parts of the Federal Capital. This has also

discouraged the use of bicycles for transportation.

4. Enlightenment: The study recommends the need to educate the public on the benefits of using other modes of transportation such as Bicycles, taking a walk and Motor Cycles. This will create public awareness and acceptability.

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