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EFFECT OF ROAD TRANSPORT REFORM IMPLEMENTATION ON FEDERAL ROAD NETWORK IN NIGERIA

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ABSTRACT

The study assessed the impact of road transport reform on road network development in Nigeria. This was to assess the performance of road transport reform in Nigeria.

This is an empirical study that employed a multistage technique in which proportional sampling technique was used to ensure adequate representation of each agency and followed by random sampling technique in the selection of sample size (328) which constituted 11.48% that was considered the fair representation of the above study population. The total of 328 copies in which 268 Type-B and 60 Type-A questionnaires were administered to the civil servants and transporters respectively.

The results revealed that on the existing constructed Federal highways, it was confirmed that roads and bridges (71.3%) are available they remained unsuitable and inadequate to the motorists. Other roads infrastructural such as dedicated walkways and cyclist (77.3%) and transit parks (92.2%) have not been provided along the Federal roads in Nigeria. The results showed that the implementation of road transport reform in Nigeria have no significant impact on road network development ($\chi^2_c = 0.0011$; $p = 0.05$).

The study concluded that the implementation of road transport reform in Nigeria have not significantly impacted on road network development.

Keywords: *Reform, Transport, Infrastructure, Impact, Development, Policy.*

1. Introduction

Transportation has been playing a significant role in the growth and development of any country. This is because transportation main function is to move passengers and goods from one location to another for higher value or utility. Transportation provides two types of utility, namely: place and time utility, which in economic terms simply means moving goods and people to where they are wanted, and when they are required. Dickey (1995) opined that transportation provides an indispensable service or facility that connects markets with the manufacturing centres and source of raw material to achieve economic growth and development. It is an industry established to serve immediate societal needs. Transportation is defined as the movement of people, goods and services from one place to another, either by land, water or air as well as a pipeline (Iwena, 2008).

In Nigeria, the modern transport system started during the period of colonialism in which the networks of water, rail and road development were established essentially for the exportation of cash crops such as palm kernel, cocoa, cotton etc. as well as the importation of cheap mass-produced consumer goods. The early transport systems were planned in the most economical way possible as shown with the construction of sub-standard and sub-base rail and road alignments which later proved inadequate to accommodate heavy vehicles. In the post-colonial era, re-orientation of goals in transport sector became imperative as transportation served as an instrument of unification of the country and an important tool for social and economic development.

The significant impact on the nation’s social and economic growth by the advent of petroleum resources development pushed up the demand on the transport system. Hence, goods and passengers' movements in Nigeria are performed by road, with the railways and inland waterways playing insignificant roles. International freight movement is done principally by the sea while air transportation is the main passenger carrier. The entire transport sub-sectors suffer from the effects of the past lack of resources which have consistently been reflected in inadequate maintenance. In the road transport sub-sector, the poor road maintenance often necessitates subsequent reconstruction.

The identified major imbalance between the needs of Nigerians and economy for adequate transport facilities and the ability of the transport sector to meet such demands informed the introduction of National Transport Policy. Friedrich (1975) defined public policy as a proposed course of action of the government or one of its divisions. It is also defined as the authoritative allocation of values to the whole society (Easton, 1979). Policy formulation is an instrument that is being used both by public and private organizations to address existing problems or imbalances and safeguard the re-occurrence of such in the nearest future through articulated goals and objectives as contained therein. Although the National Transport Policy statement was made in 1965, it was not transcribed for action. Observed extreme malfunctioning of the nation's transport system and the associated problems necessitated the emergence of the 1993 document, named "moving out of the crisis", as the adopted first National Transport Policy with its thrust on modal development.

The realisation of the fact that the aspiration contained in this document seemed inadequate to transform the dynamics and ever-changing transport sector environment nationally led to the 2003, 2008 and 2010 reforms which paid attention to integrated intermodal development, deregulation, privatisation and public-private partnership respectively. Policy reform is a condition that prevails on policymakers to effect changes on a policy after discovering some lapses.

The 2008 reform was short-lived as the need for its re-engineering of policy goals and objectives in line with social, economic and technological reality informed the emergence of 2010 National Policy document which suffers the same faith and remains essentially as a draft with the previous policies, but its contents are being implemented. The 2010 National Transport reform is aimed at institutionalizing transport system through the creation of central coordinating centres to administer its affairs. Despite the various policy document reforms, the transport sector and road transport mode witnessed deterioration in facilities. Nine years after the last reform, not much could be said to have been achieved in the transport sector in general and road sub-sector in particular. The lofty general policy goals and objectives for the transport sector and in particular the road transportation seems unattainable. As many of the Federal highways and bridges in Nigeria including Ife-Ibadan,

Oyo-Ilorin, Benin-Onitsha, Lagos-Ibadan, and Jebba-Mokwa, among other expressways, are characterized with large potholes and failed portions which slow down movements and expose users to frequent accidents with the attendant loss of lives and properties.

The major road transport infrastructure in Nigeria, as at year 2010, consisted of 34,123 km of Federal highways including seven major bridges across the Niger and Benue Rivers, the Lagos ring road, the Third Mainland Axial Bridge; 30,500 km of state roads; and 130,000 km of local roads (Buhari, 2000; FGN, 2010). Buhari (2000) observed further that, only 50% of the Federal roads and 20% of the State roads were in reasonably good condition. Only an estimated 5% of the local rural roads were freely motorable. Meanwhile, overuse and lack of maintenance are further eroding the quality of the rest of the Federal highway network. Some of the roads constructed over 30 years ago, had not been rehabilitated even once, resulting in major cracks (longitudinal and transverse), depressions, dilapidated bridges and numerous potholes that make road transport slow and unsafe (CBN, 2002).

According to the Federal Republic of Nigeria's Constitution (1999) the responsibility of the planning, developing and maintaining the nation's transport infrastructure is shared among the three tiers of Government. To this end, intra-state roads are the responsibility of State Governments; Local Governments are required to cater for intra-urban and rural feeder roads, which account for over 60% of the existing road network; while the Federal Government, through Federal Ministry of Transport, Federal Ministry of Work and Federal Road Maintenance Agency (FERMA), is responsible for the infrastructural development of national highways which constitute only 17% of the existing road network in Nigeria. Other stakeholders in road network administration are the Federal Road Safety Commission (FRSC), Nigeria Police Force and Vehicle Inspection Officer (VIO); while National Union of Road Transport Workers (NURTW) and Road Transport Employer Association of Nigeria (RTEAN) are the end-users.

Nigeria today has a dense network of urban centres unequalled anywhere in Africa (Ramirez-Djumena, 2014) with the fast-growing population of 140 million (National Population Commission, 2006) but World Population Reference Bureau (2012) put it at 170.1 million,

which surpasses the existing road network. Despite the lopsided institutional arrangement, the impact of the three tiers of government and, in particular, the Federal Government, remained minimal as the condition of Nigerian roads has become deplorable, notwithstanding the reform put in place for many reasons.

Apart from faulty design, lack of drainages and very thin coatings that are easily washed away by heavy rainfall, the underdeveloped nature of waterways and moribund railways system which has served as alternative means of transportation has increased the pressure on the roads which eventually congest the road network with heavy trailers, oil tankers and heavy vehicles and consequently spoilt the roads with resultant effect of frequent road accidents arising from potholes and road failures.

This scenario informed why attention is focussed on policy reform implementation of the transport sector and road transportation in particular as it affects Federal highways in Nigeria. Therefore, this study attempts to address the poor status of federal highways and road infrastructural deficit borne out of policy reform implementation and monitoring.

1.1 Statement of the Problem

A road is the right of passage on land between one place and another that has been paved or otherwise improved to provides mobility, timely accessibility and catalyses the efficiency and productivity of the other economic sectors. With a growing population and improved personal income which translated to increased economic activity combined to generate higher demand for transportation service which has some negative implications for development. Following the growth in transport demand, sustainable transportation policy reform has been adopted in many parts of the world, to deal effectively with the threats and simultaneously provide optimal mobility and access. This also made the Federal Government of Nigeria (FGN) introduce National Transport Policy (NTP) in 1993, aimed at achieving sustainability in the transportation system. However, it is observed that the policy reform has little influence on transportation development, especially as the railway's system has partially collapsed with resultant increased pressure on roads. Diverse studies have been conducted on the level of transport development in Nigeria. Notable among these and of importance are

Igwe, Oyelola, Ajiboshin & Raheem; (2013) Sumaila, (2013); Agbonkhese, Yisa, Agbonkhese, Akanbi; Aka & Mondigha, (2013); and Buhari, (2000) whose studies focused on reviewing the national transport policy. The major thrust of these studies centred on attributing observed road congestion and road accident to bad road conditions resulting from inadequate funding. However, these studies failed to link the remote cause of the deplorable state of federal highways to activities that were carried out during the execution stage which are the by-product of the policy implementation as well as limited road network infrastructure. Consequently, the road networks are overstretched congested with the major roads characterized by deep potholes and failed portions which impede movement and thus results in increased road traffic crashes, sustained injuries and death. It suffices to say that the administration of safety and state of infrastructure are mutually integrated. In spite of 1993 National Transport Policy and subsequent reforms, the road transport infrastructure appeared inadequate and the yearly budgetary allocation seems not to impact favourably on the quality of the existing road network with adverse consequences on safety.

As a result, there is need to evaluate the National Transport Policy (NTP) to ascertain the extent to which the reform has achieved its stipulated objectives on road network infrastructural development and in particular, the effectiveness of road transports reform implementation and the consequences on the economic activities in Nigeria. Hence, this study.

1.2 Research Questions

The study attempted to provide answers to this question

i. How efficient is the road transport reform implementation in Nigeria?

1.3 Objectives of the Study

The study has a broad objective of assessing the implementation of road transport reform in Nigeria, while its specific objective is to

i. assess the impact of the road transport reform on road network development in Nigeria; and

1.4 Hypothesis of the Study

The hypothesis set up in this study is as expressed:

i. H_o: the implementation of road transport policy in Nigeria does not have a significant impact on road network development.

1.5 Scope of the Study

Specifically, the study covered Federal Ministry of Transport, Federal Ministry of Works and Federal Road Maintenance Agency that was statutorily responsible for policy formulation, implementation, maintenance, design and construction of federal highways between 1993 and 2018. The study also focused on federal roads from three geo-political zones, namely South West, South-South and North Central. The data collection was extended to the National Union of Road Transport Worker (NURTW) and Road Transport Employers Association of Nigeria (RTEAN) who are the end-users that ply the Federal highways on the daily basis.

2. Literature Review

2.1 Roads and Concept of Road Transport

Roads came into being as soon as well-defined paths emerge for the movement of people and goods between farmland and settlements and also between settlements. It was brought about by the advent of the wheeled vehicle which invariably prompted road improvement, which informed the need to construct roads so that the use of the motor vehicle could be extended into less accessible communities and areas in developing countries. Hoyle (1973) posited that in the least developed and most remote inhabited parts of the world, transportation constituted part of the daily rhythm of life. Also, transportation as part of human activity includes the easy passage of services, goods and people from one community to the other.

Generally, transportation terrain involves complex interrelationships that are put in place between the physical environment, models of political and social activity, and economic development status. According to Nutley (1998), transportation is aimed at providing accessibility or the ability to undertake a trip for a particular reason. Transport is not undertaken for the sake of it, but the transport requirement is usually derived, and the economy remained the major transport motivation (White & Senior, 1983). Transportation is assumed to occupy a core position in the global, regional and local, economies aimed at world transformation. It does not only constantly interact with the environs but also with the spatial distribution and development with varying types of social and economic activities (Hoyle & Knowles, 1998).

Hawkins (1962), White & Senior (1983) posit that transport as an important human activity not only involves easy passage in space but as well as in time dimension. Concerning space dimension, functional transport reforms ensure the movement of cheap goods from the manufacturing point to the consumer's area thus creating and widening the markets and economic growth. However, within time frame stocks, work in progress and finished goods can be quickly turned over to serve markets and big economies (Hawkins, 1962). With the advent of new faster transport modes which have changed space and time dimension of travelling by bridging the distance connections between states, nations, regions and continental boundaries than those that exist within the towns in the same country in terms of physical distance (Simon, 1996).

As a consequence, not only has the geographies of production, distribution and consumption been affected but the world different delineation in various degrees of integration with corresponding technologies has changed dramatically.

Road transportation, unlike other modes, has improved the majority of the world's population mobility and accessibility tremendously (Hoyle & Smith, 1998). In the area of road transportation reform, three main parts have been identified to include operations, vehicles and infrastructure, which is also applicable to other modes of transportation. The vehicles as a means of transportation move on the roads connectivity while the operations deal with the management and control of the system to ensure safety. The main infrastructure features include roads, bridges, nodes and proper linkages (Dickenson; Gould; Clarke; Mather; Prothero; Siddle; Smith;& Thomas-Thorpe, 1996).

Road infrastructure is described as a set of roads which are arranged in the form of a network linking the inhabited parts been utilised by man. As the population of an area increases, the intensity of human activities become significant and the road network is more congested. A road is a dedicated passage of land which has been smoothed, paved, and prepared to free movement from one destination to the others. Roads are classified and arranged based on the importance, attributes and the function it is expected to perform or on the ownership of such road. Accordingly, roads differ in width, construction and quality of paving material,

maximum allowed slope, and minimum curvature radius. There are different categorization of roads based on functions and available features. Generally, roads are classified into four levels:

1.Trunk A Road: these are national highways or major roads of a country that connect state or regional capitals and cities. These roads are either dual carriageway or expressway.

2. Trunk B road: these are state highways that link market and towns within the state to the state capital and also connected to national highways.

3. Trunk C road: these are roads built within the Municipal, local community or urban and rural roads that connect farmland and markets with towns within one province

4. The International roads: these are roads that are constructed to connect two or more countries.

Trunk roads are usually a collective grouping of National, International and primary highways while minor and tertiary roads are usually grouped as local or community roads that remained largely unpaved but provide access to goods and services.

New roads are built to enhance road transport between two places to achieve economic benefit and social development that are associated with building a new road. New roads are put in place not only to relieve the existing roads of traffic congestion but to make new settlements accessible by connecting them to the road network and promoting commerce and other functions in the area. However, Simon (1996) posits that new roads construction do not necessarily guarantee development in the area as he affirms that there is an indirect relationship between infrastructural upgrade and development.

Equally, Hodgson (2012) argued that transport policy is specifically designed to proffer solution and focus on the social issue of movement from the human angle as against viewing mobility as just a feature of the society.

However, transport policy deals with mobility as a central feature of the new world. Accordingly, to enhance globalization, the objective of transport policy is not aimed at changing mobility itself but rather the mobility pattern. Hodgson (2012) concluded that the political goals complexities in transport policy inform why the issue of policy design became

unique for policy researcher. Thus, Oyesiku (2004) concurred that transport policy not only serves as the bedrock for the planning and direction of growth of the transport system but it enucleates the extent to which the planning and provision of transport provide appropriate solutions. Oyesiku (2004) affirmed that the adopted strategies in transport provision together with the efficiency of the transport system are indirectly related to the nature and dynamism of the country transport policy. The consequence of societal values, transport policy and reform process outlines and responds to the type of transport needs of the society in the way and manner it wants it developed. This is why studies in transport and reform process are said to be dynamic and flexible. As a consequence Sumaila (2008) posit that transport policy reform has many composite implications with its goals interdependent.

Within and across countries, Mercado, Paez, Scott, Newbold, & Kanaroglou (2007) have advanced an analytical framework to assess transport policies whose framework is directed on three indices of a policy which include consequence, context and content. It was argued that the analytic framework and enumeration of policy objectives and values are useful in understanding why a particular transport approaches are embraced at the expense of others and which better explain the variations that occur across countries. Hence, from the perspective of a policy reform analyst's, there is a need to consciously situate existing or proposed policies within the context of the country's main policy problem.

According to Mercado et al (2007), interpretation of transport policies is based on the context in which it was formulated bearing in mind the organizational arrangement and policy motivation derivable from the nation's political and socio-economic situations. The institutional analysis assesses the country's governmental structure and how the established relationship of sub-national will key in into the policy formulation and implementation process. But the end-goals are the analytical product derivable from policy motivation of the country transport framework. Policy approaches, objectives and solutions are used, to sum up, policy contents while consequence directly relates to the performance of policy solutions and policy outcomes. It was emphasized that policy intentions may become ineffective through the real implementation procedures of the adopted programme approaches and solutions which culminated in poor outcomes or unintended consequences.

2.2 **Road Transport Infrastructural Facilities**

Infrastructure is the basic physical and organizational structure needed for the operation of a society or enterprise (Online Compact Oxford English Dictionary, 2009), or the services and facilities necessary for an economy to function (Sullivan & Steven, 2003). Infrastructure is viewed not only as a set of interrelated structural elements that provides a framework supporting an entire developmental structure but used as an important tool for assessing a nation's development. Generally, the rail, road, tunnel, bridges, water, telecommunication etc. are technical structures that support a society which can be defined as the basic components of interconnected systems that provide goods and services essential for sustenance or enhancement of the societal standard of living (Fulmer, 2009).

The term infrastructure in Keynesian economics is primarily used in describing public assets that accelerate production but not extended to private assets of similar purpose. In the theory of public economics, infrastructural assets which include and not limited to railways, highways and waterways are classified as public goods with a high degree of non-excludability where a household cannot be exempted from using it, and non-rivalry, where enjoyment of the facility cannot be reduced by another household. The free ridership and spill-over effects externality properties distort perfect competition and market efficiency. Hence, the government remains the only actor that can supply public goods (Myles, 1995).

The soft infrastructure are the institutions that are required to maintain economic, education health, cultural and social standards of a country such as the system of government, education system, healthcare system as well as financial system, but hard infrastructure involves large networks necessary for proper functioning of a modern industrial nation (Zagarenski, 2009; Online Compact Oxford English Dictionary, 2009). Transportation infrastructures are mainly in the form of the following:

- Road and highway networks, including structures (the carriageway, drainage system, bridges, flyover, culverts, tunnels, retaining walls), markings and signage, electrical systems (street and traffic lights,), edge treatments (sidewalks, landscaping, curbs), and special road maintenance depot and restrooms facilities.

- Bicycles paths and pedestrian walkway, including pedestrian bridges, and other specialized structures for cyclists and pedestrians
- Mass transit systems (commuter rail system, subways, tramways, trolley, etc.)

The transportation infrastructure is not limited to the road; other transport modes have its peculiar infrastructures. For highways, and other transport modes, Fulmer (2009) provides a detailed discussion of the history and importance of these major infrastructures as follows:

The word critical infrastructure was used in distinguishing between those infrastructural components which if appreciably damaged, would cause serious interruption of the dependent system or organization. A typical infrastructure could be damaged by wind-storm, flood or earthquake leading to loss of particular route in a town in which there is no alternative route is considered critical infrastructure.

Municipal infrastructure is hard infrastructure systems that are owned and operated by municipalities which include and not limited to street light, the streets, water distribution, and sewage also soft infrastructure such as parks, and libraries are not left out. Generally, infrastructural structures not only include the fixed assets, and the control systems, but also software that are required to operate, manage and monitor the structures as well as all other accessories that are an important part of the structure. In most cases, infrastructural investment in road transportation requires construction and subsequent maintenance.

2.3 Policy Output and Result

Policy output generally refers to the results of invocation and execution of public policy. Policy output can be defined as tangible manifestations of public policies (Anderson, 1975; Nagel, 1975). They comprise all actions and activities undertaken and concrete achievements made in pursuance of policy objectives or in the course of effectuating a policy. Policy output refers to actual things done to back up a formulated policy or statement of intentions. It is policy-related activities of governments and the consequences of such activities in terms of structures, goods and services. Therefore, it is the products or results of policy activity. However, these products or results are intermediate, which are not the final or sum of

products produced by policy activity. Hence, policy output comprises expenditures, personnel, equipment, research activities and such others that may be deployed or utilized in the course of implementation. These interact with the policy and implementation environment, such as social, economic and physical environment to produce goods and services. It has been emphasized that expenditures do not effectively approximate output because higher expenditure does not mean higher accomplishments or improved service deliveries either quantitatively or qualitatively. Expenditures do not explain accurately variation in the delivery of services or can the delivery of service be precisely measured by levels of expenditures (Cook & Scioli, 1972). In other words, the expenditure of funds do not mean the achievement of results, taking cognisance of corruption, inflation of contract costs and political patronage make a case for reluctance in the use of expenditures as a measure of output. The seriousness with a commitment to and the importance attached to particular policies by governments are reflected by the output. The speed, level and scope of output reflect the level of governmental commitment.

Policy outcome is the total results or products of the entire policy activities or process. It is the sum of outputs of policy activity which impact the environment and produce policy effects (Robinson & Majak, 1967). Egonmwan (1991) describes policy outcomes as the intended or unintended consequences of policies for a society that flow from action to inaction of government or its officials. The intended impact is the assessment of whether the stated purpose of policy appears to be what the policy is achieving. The unintended impact may be several organizations operating in the same policy area which are affected by the interacting effects. Output determines the outcome and impact of public policies. However, the high output does not necessarily mean good outcome or impact, because output may not be in critical areas or areas directly related to intended outcomes.

2.4 Impact of Road Transport Infrastructural Development in the Developing and Developed Countries of the World

According to the Overseas Development Institute researchers, the absence or inadequate infrastructure in many developing nations not only imposes a significant limitation on economic growth but also the achievement of the Millennium Development Goals (MDGs)

(Kingombe, 2011). In the landlocked rural and sparsely populated African nations, infrastructure investments and maintenance can be very expensive (Kingombe, 2011). The claim that infrastructural investments contributed to more than half of Africa's improved growth performance between 1990 and 2005, and increased investment is necessary to maintain growth and tackle poverty as posited by Kingombe (2011). The returns on infrastructural investment are assumed to be very significant, constituting about thirty to forty per cent returns on telecommunications investments, over forty per cent for electricity generation, and eighty per cent for roads (Kingombe, 2011). These in effect substantiate the above scholarly research.

However, the infrastructural demand (transportation inclusive), both by consumers and industries seemed to have surpassed the amount invested (Kingombe, 2011). Obviously, in Asia that there exists serious challenge on the supply side of the infrastructural provision (McCawley, 2010). The gap between infrastructural investment in Asia-Pacific (US$48 billion) and the actual requirement (US$228 billion) is around US$180 billion every year (Kingombe, 2011). Comparatively, to meet the infrastructural demand in Latin America, about three per cent of GDP (US$71 billion) will have to be required as against two per cent that was invested in 2005 leaving a financing gap of US$24 billion (Kingombe, 2011). For Africa, to be at pace with the projected seven per cent annual growth rate to meet the MDGs by 2015, fifteen per cent of GDP, or US$93 billion a year will be needed on infrastructure investments (Kingombe, 2011). This is not excluding Nigeria nation as expansion and maintenance of infrastructure is largely and widely confronted with scarce dwindling financial resources. In an economic weak state, over thirty-seven per cent of GDP is required (Kingombe, 2011). In Africa infrastructural financing has worsened greatly till date.

Although in Africa infrastructure offers substantial economic, social and environmental benefits, but suffers from appreciable underinvestment. The infrastructural gap not excluding the transport sector infrastructures in Africa and in particular Nigeria is so obvious with its negative impact on economic growth and standard of living. The anticipated action plan which must be urgently addressed consists of all the transport modes programmes, which include rail, aviation, water and road as well as regulatory enabling policy. To move at

current global demand pace, investment in infrastructure is projected to be more than double; increasing by US$ 1 trillion per annum through 2020. The environmental "clean" infrastructural development would raise this amount by a projected additional US$ 200-300 million per annum.

Infrastructure development not only contributes to the output growth by stimulating economic activity and productivity but also enhancing the quality of life (World Bank, 1994). The empirical research on the importance of infrastructure in economic growth started by Aschauer (1989; 1993) when it was found that the high output elasticity of infrastructural spending ranges from 0.38 to 0.56. Further, it was revealed that in the United State the lack of infrastructural spending slows down the productivity growth. In the same vein to support Aschauer (1993), Munnell (1992) and Garcial-Mila, McGuire and Porter (1996) find high output elasticity, though comparatively lower than Aschauer (1993), of public investment on infrastructure. Similarly, series of study in different countries supported Aschauer's (1993) finding, though with lower elasticity (Holtz-Eakin & Schwartz, 1995; and Garcia-Mila, McGuire and Porter (1996) that infrastructure has a positive and significant impact on output growth. Some of the scholars who found a positive impact of infrastructural development on economic growth are Uchimura and Gao (1993) for Korea and Taiwan on transport, water and communication; Bregman and Marom (1993) for Israel; Shah (1992) for Mexico on transport, power and communication.

Similarly, cross-country studies were carried out on the impact of infrastructure on economic growth in developing countries which show a positive and significant relationship between them (Calderon & Serven, 2003; Canning & Pedroni, 2014; Sahoo, 2006; and Sahoo & Dash (2009; 2010)). Easterly and Rebelo (1993) found that the output of elasticity on infrastructural investment on transportation and communication for 100 countries to be high. The studies by Canning and Fay (1993) suggested moderate returns for underdeveloped countries and normal to high rates of return on infrastructure investment for developed countries.

Furthermore, Sanchez-Robles (1998) found a positive impact on electricity generating capacity and in particular of road length in explaining subsequent economic growth.

3. Methodology

The study employed a descriptive design that involved a systematic collection, presentation, tabulation, interpretation and analysis of data on the assessment of road transport reform implementation in Nigeria. The study population (2863) consisted of civil servants and transporters. The civil servants from the Federal Ministry of Works (1223), Federal Ministry of Transport (975) and Federal Road Maintenance Agency (485) were senior staff on grade level 7 and above. The transporters were the executive members drawn from the National Union of Road Transport Workers (90) and Road Transport Employer Association of Nigeria (90).

In the administration of the questionnaire (Type-A and B), a multistage sampling technique was adopted in the choice of three geo-political zones (south-south, south-west and north-central) out of six geo-political zones; and two states and their capital from each of the zones: Oyo State (Ibadan), Ondo State (Akure), Edo State (Benin), Delta State (Asaba), Kogi State (Lokoja) and Kwara State (Ilorin) from each of geo-political zones were purposively selected. The choices of these states were informed because all states capitals were connected by federal roads as well as forming networking with those that are not selected. In the chosen States the State Headquarters of NURTW and RTEAN were visited for data collection. The second stage involved the selection of 33% of the executive members of NURTW and RTEAN to take care of their small population. Proportional sampling technique was used to ensure adequate representation of each agency and followed by random sampling technique in the selection of sample size (328) which constituted 11.48% that was considered the fair representation of the above study population. The total of 328 copies of the questionnaire was administered to the respondents whose distribution was as shown in Table 1. A set of the questionnaire (Type-B) was administered on 268 respondents who were civil servants and another set of the questionnaire (Type-A) was administered on 60 respondents from the executive members of the NURTW and RTEAN

Table 1 Administration of Questionnaire

Ministry and Agency	Population	size	Percentage
Federal Ministry of Transport	975	98	29.8
Federal Ministry of Works	1223	122	37.1
FERMA	485	48	14.9
NURTW	90	30	9.1
RTEAN	90	30	9.1
Total	**2863**	**328**	**100.00**

Fieldwork, July 2019

This research utilized Likert scale rating method as variable measurements, such as: 'Strongly Agree' (5), 'Agree' (4), 'Indifferent' (3), 'Disagree' (2), and 'Strongly Disagree' (1). Respondent was also asked sometimes to justify and express a personal opinion as appropriate on certain questions. This type of variable measurements is assumed to generate the needed responses.

4. Data Presentation, Analysis and Discussion

4.1 Assessing the Impact of the Road Transport Reform on Road Network Development in Nigeria

This study considered the following indicators: construction of highways, bridges, road signs, transit parks, walkways, interconnectivity etc. as germane for consideration for the impact of the road transport reform on road network development.

Impact of the Road Transport Reform on Road Network Development was investigated under twenty indicators as presented in Table 2 to Table 5. The study revealed in Table 2 that 71.3% of the respondents affirmed that the constructed Federal highways/ bridges/drainages were available, unsuitable and inadequate. Only 8(2.5%) of the respondents judged them 'available, suitable and adequate'. Only 6(1.9%) of the respondents judged the resultant road signs/traffic light and street lightning as been available/ suitable/adequate'. Of the remaining respondents, 38(42.6%) judged them 'available/suitable/inadequate'. 133(41.3%) judged them as being 'available/unsuitable/inadequate, and 45(13.9%) judged them as being 'unavailable, unsuitable and inadequate'.

Of the 324 sampled respondents, only 4(1.5%) judged the resultant provision of walkways/cyclist and overhead bridges as been available/suitable/adequate. 247(77.3%) judged them 'unavailable/unsuitable/inadequate'. 294(90.7%) of the respondents judged the provided transit park along Federal roads as being 'unavailable/unsuitable/inadequate'. None (0.0%) judged them 'available/suitable/adequate'. More than a half (168 (51.0%)) of the sampled population judged the resultant connectivity between road/ rail/port as being 'available/suitable/adequate'; 98(30.2%) judged them as being available/suitable/inadequate'; 27(8.3%) judged them 'unavailable/unsuitable/inadequate'; while 24(7.4%) judged them 'available/unsuitable/inadequate'.

A total of 309(95.4%) of the respondents either 'disagreed (206(63.6%)) or strongly disagreed with the notion that implementation of the road transport reform has enhanced the movement of people /services in good time. 307(94.8%) of the respondents either disagreed (91(28.1%)) or strongly disagreed (216(66.7%)) with the notion that implementation of the road transport reform has brought about a significant reduction in the cost of vehicle repairs.

Table 2: assessing the Road Transport Reform on Road Network Development in Nigeria

1	**Constructed federal highways/bridges/drainages**	**Frequency**	**Percentage**
	Available/suitable/adequate	8	2.5
	Available/suitable/inadequate	83	25.6
	Available/unsuitable/inadequate	231	71.3
	Unavailable/unsuitable/inadequate	2	0.6
	Total	**324**	**100.0**
2	**Road signs/traffic light and street lighting**		
	Available/suitable/adequate	6	1.9
	Available/suitable/inadequate	138	42.6
	Available/unsuitable/inadequate	133	41.3
	Unavailable/unsuitable/inadequate	45	13.9
	No response	2	0.6
	Total	**324**	**100.0**
3	**Provision of walkways/cyclist and overhead bridges**		
	Available/suitable/adequate	4	1.5
	Available/suitable/inadequate	9	1.5
	Available/unsuitable/inadequate	61	19.7
	Unavailable/unsuitable/inadequate	247	77.3
	Total	**321**	
	No response	3	
	Total	**324**	**100.0**
4	**Transit parks along federal roads**		

	Available/suitable/adequate	-	-
	Available/suitable/inadequate	8	2.5
	Available/unsuitable/inadequate	17	5.2
	Unavailable/unsuitable/inadequate	294	90.7
	No response	5	1.5
	Total	**324**	**100.0**
5	**Connectivity between road/rail/port**	**Frequency**	**Percentage**
	Available/suitable/adequate	168	51.9
	Available/suitable/inadequate	98	30.2
	Available/unsuitable/inadequate	24	7.4
	Unavailable/unsuitable/inadequate	27	8.3
	Total	**317**	
	No response	7	2.2
	Total	**324**	**100.0**
6	**Movement of people/services in good time**		
	Strongly agreed	2	0.6
	Agreed	4	1.2
	Indifferent	4	1.2
	Disagreed	206	63.6
	Strongly disagreed	103	31.8
	Subtotal	319	
	No response	5	1.5
	Total	**324**	**100.0**

Source: Fieldwork, July 2019.

As indicated in Table 3, more than a half (168 (51.0%)) of the sampled population judged the resultant connectivity between road/ rail/port as being ‘available/suitable/adequate’; 98(30.2%) judged them as being available/suitable/inadequate’; 27(8.3%) judged them to be ‘unavailable, unsuitable and inadequate’; while 24(7.4%) judged them ‘available/unsuitable/inadequate’.

A total of 309(95.4%) of the respondents either 'disagreed (206(63.6%)) or strongly disagreed with the notion that implementation of the road transport reform has enhanced the movement of people /services in good time. 307(94.8%) of the respondents either disagreed (91(28.1%)) or strongly disagreed (216(66.7%)) with the notion that implementation of the road transport reform has brought about a significant reduction in the cost of vehicle repairs.

298(91.9%) of the respondents either 'disagreed (189(58.3%)) or strongly disagreed (109(33.6%)) with the suggestion that implementing the road transport reform has brought a reduction in accidents.

Table 3: Assessing the Road Transport Reform on Road Network Development in Nigeria

7	**Reduction in the cost of vehicle repairs**		
	Strongly agreed	6	1.9
	Agreed	-	-
	Indifferent	4	1.2
	Disagreed	91	28.1
	Strongly disagreed	216	66.7
	Subtotal	317	
	No response	7	2.2
	Total	**324**	**100.0**
8	**Reduction in accidents**		
	Strongly agreed	-	-
	Agreed	15	4.6
	Indifferent	4	1.2
	Disagreed	189	58.3
	Strongly disagreed	109	33.6
	Subtotal	317	
	No response	7	2.2
	Total	**324**	**100.0**
9	**Access to transportation**	**Frequency**	**Percentage**
	Strongly agreed	2	0.6
	Agreed	7	2.2
	Indifferent	21	6.5
	Disagreed	252	77.8
	Strongly disagreed	39	12.0
	Subtotal	321	
	No response	3	0.9
	Total	**324**	**100.0**
10	**Increase in cost of transportation**		
	Strongly agreed	116	35.8
	Agreed	189	58.3
	Indifferent	5	1.5
	Disagreed	6	1.9
	Strongly disagreed	-	-
	Subtotal	316	
	No response	8	2.5
	Total	**324**	**100.0**
11	**Newly constructed roads and bridges**		
	Strongly agreed	2	0.6
	Agreed	2	0.6
	Indifferent	4	1.2
	Disagreed	152	46.9
	Strongly disagreed	162	50.0

	Subtotal	322	
	No response	2	0.6
	Total	**324**	**100.0**

Source: Fieldwork, July 2019.

As shown in Table 4, 291(89.8%) of the respondents either disagreed (252(77.8%)) or strongly disagreed (39(120%)) with the suggestion that implementing the road transport reform has brought about significant access to better transportation. 305(94.1%) of the respondents either strongly agreed (116(35.8%)) or agreed (189(58.3%)) with the notion that implementing the road transport reform has brought about an increase in the cost of transportation. 314(96.4%) of the respondents either disagreed (152(46.9%)) or strongly disagreed (162(50.0%)) with the suggestion that implementing the road transport reform has led to the emergence of many newly constructed roads and bridges. Also, 298(92.0%) of the respondents either disagreed (277(85.5%)) or strongly disagreed (21(6.5%)) with the idea that implementing the road transport reform has brought about a significant reduction in road congestion.

Table 4: Assessing the Road Transport Reform on Road Network Development in Nigeria

12	**Road congestion**		
	Strongly agreed	2	0.6
	Agreed	18	5.6
	Indifferent	4	1.2
	Disagreed	277	85.5
	Strongly disagreed	21	6.5
	Subtotal	322	
	No response	2	0.6
	Total	**324**	**100.0**
13	**Road rehabilitation and maintenance**	**Frequency**	**Percentage**
	Very significant	-	-
	Significant	4	1.2
	Less significant	84	25.9
	No significant	227	70.1
	Subtotal	315	
	No response	9	2.8
	Total	**324**	**100.0**
14	**Road electrification**		
	Very significant	-	-
	Significant	-	-
	Less significant	77	23.7
	No significant	240	74.1
	Subtotal	317	
	No response	7	2.2

	Total	**324**	**100.0**

Source: Fieldwork, July 2019.

On the suggestion that implementing the road transport reform has brought about significant improvement in road rehabilitation and maintenance, Table 4 indicated that 311(96.0%) of the respondents either judged the impact of implementing the project as being 'less significant' (84(25.9%)) or being of 'No significance' (227(70.1%))

On-road electrification, all the respondents either perceived the contribution of implementing the road transport reform as either being 'less significant' (77(23.7%)) or of 'no significance' (240(74.1%)).

Table 5: Assessing the Road Transport Reform on Road Network Development in Nigeria

15	**Assessment of government agency**		
	Very good	2	0.6
	Good	105	32.4
	Fair	102	31.5
	Poor	103	31.8
	Very poor	4	1.2
	No response	8	2.7
	Total	**324**	**100.0**
16	**Executed projects justification (value for money**	**Frequency**	**Per cent**
	They do justify	5	1.5
	They do not justify	144	44.4
	I can't say	162	50.0
	No response	13	4.0
	Total	**324**	**100.0**

Source: Fieldwork, July 2019.

Assessing Government Agencies roles in implementing road transport reforms, only 107(33.0%) of the respondents rated the agencies either 'poor' 103(31.8%) or 'very poor' (4(1.2%)). Of the remaining 209(64.5%), 102(31.5%) rated them 'fair', 105(32.4%) rated them 'good' and 2(0.6%) rated them 'very good'. Only 5(1.5%) of the respondent believed that the projects executed by these agencies justified money expended on them. 144 (44.4%) believed otherwise, while 162(50.0%) were indifferent.

4.2 Hypothesis Testing

A research hypothesis that 'the implementation of road transport reform did not have a significant impact on road network development in Nigeria' was formulated and tested, with chi-square (χ^2) test, using the following variables: 'Constructed federal highways/bridges/drainages,' 'Transit parks along federal roads,' and 'Connectivity between road/rail/port'. Results of the chi-square test are as presented

Using the chi-square test to test the Hypothesis

Chi-Square $(\chi^2)_{calculated}$ is given as

$$\sum \left[\frac{(o_i - e_i)^2}{e_i} \right]$$

Note: o_i is the observed frequency and e_i is the expected frequency

$\chi^2_c = 0.00112$

$\chi^2_T = 0.0039$

χ^2_T at 5% significance level (0.05) with degree of freedom (1) = 0.0039 which implied that $\chi^2_c < \chi^2_T$

Then the Null hypothesis H_0 was accepted and Alternate hypothesis rejected

4.3 Interpretation of Result

Since the value of chi-square (i.e. 0.0112) calculated was less than the value of chi-square tabulated (i.e. 0.0039), the Null hypothesis which stated that the implementation of road transport reform in Nigeria did not have a significant impact on federal road networking was accepted.

4.4 Discussion of Findings

In the course of this study, many scholars' works were reviewed in the area of policy formulation and implementation, as well as the role, played by the stakeholders concerning the road transport infrastructural development in Nigeria and the developed countries of the world. This study intends to juxtapose the obtained results with the reviewed extant literature to draw out the area of convergence or that of divergence.

The adopted variables to measure the impact of the road transport reform on road network development were obtained from the existing literature which included ascertaining the availability, suitability and adequacy of road infrastructure on one hand, and desired outcome of such infrastructure on the commuters and other sectors of the economy on the other hand. The study found that the implementation of road transport reform in Nigeria did not have a significant impact on road network development. (χ^2_c = 0.00112 at p-value = 0.05). On the existing constructed Federal highways, it was confirmed that roads and bridges (71.3%) are available they remained unsuitable and inadequate to the motorists. Other roads infrastructural such as dedicated walkways and cyclist (77.3%) and transit parks (92.2%) have not been provided along the Federal roads in Nigeria. These findings buttressed the fact that PPP model has not impacted on infrastructural development in Nigeria as posited by Oroleye (2019) and in contrary to positive impact obtainable in South Africa (World Bank Development Indicators, 2010; CIA World Factbook, 2010). Likewise, the activities of the agencies on road rehabilitation and maintenance (72.0%), road electrification (75.7%), and newly constructed roads and bridges (76.2%) were ranked as of no significance. Thus, justifying why most of the Federal roads are in deplorable conditions as it was revealed by Buhari (2000) and CBN (2002).

However, the outcome of the existing constructed and poorly maintained roads with potholes and failed portions, as pointed out by Agbonkhese et al. (2013) manifested in long delay in movement of goods and services as pointed out by the study (96.9%) which aggravating road accidents (94.0%) as well as road congestion (92.5%), a situation that was affirmed (96.5%) to be responsible for increased transportation cost which definitely increases the cost of goods and services. This is apart from the fact that road traffic accidents become a daily occurrence (Odugbemi, 2010; FRSC, 2012 & WHO, 2013). All these findings signified that Federal highways in Nigeria have become grossly inefficient to promote social, political and economic development.

5. Conclusion

The returns on investment on the road infrastructural development is very significant which justify the claim that infrastructural development contributes to output growth by stimulating

economic activities, productivities and enhancing the standard of living. In contrast, the infrastructural investment in Nigeria through annual budgetary allocation has not impacted on road network development. Apart from the fact that the total road length has become insufficient, the existing ones has worsened and become impassable to support the increasing population's social and economic activities which calls for the need to declare State of Emergency on transportation in general and road transport in particular.

The study concluded that the implementation of road transport reform in Nigeria have not significantly impacted on road network development.

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