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GOVERNMENT INVESTMENT ON ROAD INFRASTRUCTURE IN KOGI STATE, NIGERIA: THE IMPACT ON URBAN MOBILITY

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Abstract. Road infrastructure has been identified as a major factor for sustaining urban mobility and requires constant investment in the form of budgetary allocation for construction, rehabilitation, and maintenance. To this end, the study assesses government investment in road infrastructure in Kogi State, Nigeria and how it impacts urban mobility. The study adopted a mixed-method research design and deployed a questionnaire survey to elicit information from randomly selected 1,215 household heads. Also, data on the state's budgetary allocation and road infrastructure expenditure from 2008–2018 were sourced. Findings shown that the year 2015 received the highest budgetary allocation for road infrastructure and there is a statistically significant trend difference in the development of road infrastructure in the area. The results revealed that the annual road infrastructure expenditure has a statistical influence on the state's general sectoral budget ($F_{9}^{1} 92.776$, $p=0.000<0.05$). Meanwhile, residents' perception analysis revealed that government investment on road infrastructure is fairly impactful in Adavi, Okene, Dekina, Ajaokuta, and Lokoja, somewhat impactful in Ankpa and Kabba-Bunu, and no impact was felt in Mopa-Amuro and Bassa-Oguma communities. The study recommends giving more priority and increasing budgetary allocations for road infrastructure towards improving urban mobility and logistics functions in the state.

Keywords: Budgetary allocation, government expenditure, road transport infrastructure, transport system, urban area, urban transport.

Rezumat. Infrastructura rutieră a fost identificată ca un factor major pentru susținerea mobilității urbane, care necesită investiții constante sub formă de alocări bugetare pentru construcție, reabilitare și întreținere. În acest scop, studiul evaluează investițiile guvernamentale în infrastructura rutieră din statul Kogi, Nigeria și impactul acesteia asupra mobilității urbane. Studiul a adoptat un design de cercetare cu metode mixte și a desfășurat un chestionar pentru a obține informații de la 1215 capi de gospodărie selectați aleatoriu.

De asemenea, au fost obținute date privind alocarea bugetară a statului și cheltuielile cu infrastructura rutieră din 2008–2018. Constatările au arătat, că anul 2015 a fost cea mai mare alocație bugetară pentru infrastructura rutieră și există o diferență semnificativă statistic în dezvoltarea infrastructurii rutiere în zonă. Rezultatele au arătat că cheltuielile anuale cu infrastructura rutieră au o influență statistică asupra bugetului general sectorial al statului ($F_{1/9} 92,776, p=0,000<0,05$). Între timp, analiza percepției rezidenților a arătat că investițiile guvernamentale în infrastructura rutieră au un impact destul de mare în Adavi, Okene, Dekina, Ajaokuta și Lokoja, în Ankpa și Kabba-Bunu și nu s-a simțit niciun impact în comunitățile Mopa-Amuro și Bassa-Oguma. Studiul recomandă acordarea mai multor priorități și creșterea alocațiilor bugetare pentru infrastructura rutieră în vederea îmbunătățirii mobilității urbane și a funcțiilor logistice în stat.

Cuvinte cheie: *Alocare bugetară, cheltuieli guvernamentale, infrastructură de transport rutier, sistem de transport, zonă urbană, transport urban.*

1. Introduction

The road transport system is a major sub-sector of transportation globally. This is because its operation is very flexible and, owing to this fact, road transport accounts for more than 90% of all passenger transport and greater than 80% of all freight transport in most nations of the world in terms of tonnes and passengers carried [1, 2]. It is the greatest mode of conveying people, goods, and services from one point to the desired destination with the sole value of time and worth chain addition [1, 3]. The successful operation of road transport is hinged on the level of road infrastructure. Road infrastructure is among the basic and critical factors that form the face of development in every economy. Road transport, through its infrastructural amenities, provides access and mobility means to employment, health, education, and other social services, which are vivacious to any meaningful development program [4]. Road transport infrastructure includes fixed installations such as road networks, terminals, bus sheds/stops, parking lots, walkways, laybys, kerbs, vehicles, and other ancillary facilities required for successful accessibility and mobility functions [3, 5]. In a similar view, road infrastructure refers to structural facilities that help the movement of people, goods, and services through the difference means of transport on the road. This includes the carriageway, pedestrian and cycling facilities (such as walkways, cycle paths, and parking areas), drainage, culverts (box or ring types), bridges and flyovers, street light installations, traffic signs, laybys, traffic lights, and speed breakers, among others [6, 7].

Road infrastructure plays an important role in the growth and development of nation. It does not only facilitate the movement of people, goods, and services from one point to another and where they are effectively developed, it also opens opportunities for freshness of new ideas and technology, thereby facilitates efficient performance of all the national economic sectors [1]. Despite the obvious importance of road transport infrastructure facilities to the nation's development, its development, functionality, and sustainability have still been undermined by various factors, particularly in developing nations including Nigeria. Of particular interest among these causal factors is the unprecedented urbanisation rate, which has been a global issue since the industrial revolution. The alarming rate of urbanization results in an increasing rate of spatial physical development, unprecedented population growth, increasing rates of vehicular ownership, and uncontrolled automobile dependency in cities [3, 4]. The effects of the urbanization trend on road transport infrastructure often

necessitate the development, redevelopment, provision, and implementation of adequate road transport systems, where the issue of infrastructure expansion and new installation becomes very important towards achieving desired economic development.

In most cases, the situation in developing countries, especially in Sub-Saharan Africa, is different from what is obtainable in developed countries. Specifically, the Nigerian road transport system is characterized by inadequate quality road infrastructure facilities, a highly populated and congested road urban network, low capacity facility design, poorly maintained and managed facilities, and wrongly administered facilities. The poor condition of road infrastructure has, ironically, not only hampered smooth traffic movement, but also prolonged travel time, higher travel costs, increased vehicular depreciation, increased pollution, and disruption to vehicular-pedestrian-friendly environment [1]. For instance, in Nigeria, taking evidence from an x-ray of some roads constructed more than 30 years ago, shows that the majority of these roads have not been rehabilitated even once, resulting in major cracks (longitudinal and transverse), depression, broken down bridges, and several potholes that make road transport boring and unsafe for passengers [8, 9], while a high percentage of those that were rehabilitated and are undergoing rehabilitation are obviously quickly deteriorating due to the use of substandard construction materials, poor funding, mismanagement of funds, poor capacity expansion and overutilization of the facilities due to population pressure [4, 10, 11] were of the opinion that the poor state of road infrastructure in Nigeria is accredited to unreliable infrastructural designs, lack of drainage and curvet for easy runoff, the use of very thin coatings which are easily washed away by erosion, excessive use of the road network due to the underdeveloped nature of waterways and railways, the absence of an articulated road program, inadequate funding for road maintenance and poor priority to administration. Meanwhile, the importance attached to the road transport sub-sector based on its singular contribution to local, regional, and national development is reflected in governments' huge resource allocation to road infrastructure in the last three decades. Yet, the resultant effect does not commensurate with the current physical state of road infrastructure development, ease of mobility, and commuting satisfaction, especially in the country's urban areas.

It is against this background that the study assessed government investment in road infrastructure in Kogi State, Nigeria with a view to understanding its impact on urban mobility in the study area. To achieve this aim, the following objectives were explored: We examined the government's investment trend on road transport infrastructure (2008–2018) in Kogi State, Nigeria; examined statistical variation in the road infrastructure development in the study area; examined the statistical influence of annual road infrastructure expenditure on the general state's sectoral budget; and appraised the perceived impact of government investment on road infrastructure on urban mobility performance in the study area.

2. Brief Literature Review

Transport infrastructure plays an acute and reformist role in the economic growth of any nation. Infrastructure plays a significant role in almost all development economic theories proposed by authors such as [11-13], among others. These authors directly or indirectly cogitate infrastructure as a vital determinant of growth and development, as well as how it interacts with the economy through a web of complex economic connections that are captured by collective production, employment, and wellbeing [14]. The impact of transport infrastructure cannot be overemphasized, especially road transport, which is

virtually available and mostly accessible everywhere for the running of daily activities. Provision of this type of infrastructure (road infrastructure) is, however, capital intensive [15]. In Nigeria, according to [16], road infrastructure is usually financed through government budgetary expenditures and there are rival demands on these expenditures. As a result, [17] believed that the government should devise a mechanism to identify the best area for capital investments that will generate alternative sources of funding for road infrastructure provision. This is necessary because of the huge amount required to finance road infrastructure, which the government alone may not be able to finance.

Reference [18] opined that in spite of the annual budgetary allocations for road construction and infrastructure in Nigeria, a great portion of the roads in the country are in deplorable conditions, making mobility or movement difficult for passengers. This shows that the government's budgetary allocation is inadequate to cater for the road infrastructure owing to the vast infrastructure gap in the country. This is not astonishing as the Nigerian government finances its projects through three main sources: oil revenue, taxation, and debts. However, in light of the decreasing global oil prices and concerns regarding Nigeria's rising debt profile, the government has increased its effort on revenue from taxation. To make matters worse, most of these taxes are not fully utilized for the purpose for which they were intended, and in most cases, citizens find it difficult to reap the benefits of their taxes due to corruption and inconsistency in government policy [7].

Similarly, [19] investigated the factors responsible for low revenue, such as tax avoidance, insufficient tax personnel corruption, tax evasion, poor collection mechanisms, free rider problems, rich tax dodgers, tax run, welfare cost of taxation (administrative and compliance costs), terrorism, militancy, and record falsification. All these have a serious impact on the budget and funding of projects (roads inclusive) in Nigeria. Globally, the role of government in the delivery of infrastructure has been a subject of discuss [20]. There is a huge argument as to whether infrastructure investment should be exclusively the responsibility of the government or whether it should attract private participation. As evidenced by road infrastructure in Nigeria, this situation has left users with the problem of not being sure of who to blame for poor infrastructure performance that has astounded Nigeria for so many years [21].

The major dilemma in government investment in road infrastructure, as opined by [22], is relating to the issues of procurement process and funding. According to them, Nigeria was losing an average of \$265 million annually through numerous ways of manipulation of the procurement procedure in the execution and award of public contracts (roads inclusive). These included, among other things, using the contract system to divert public funds to private pockets, hiring inexperienced contractors, inflating contract costs, awarding contracts for non-existent projects, over-invoicing, project peddling, awarding contracts to friends, relatives, and family members, and awarding contracts without adequate planning and budgetary provisions identified as the major causes of public project abandonment and, of course, a major threat to sustainable infrastructure development in Nigeria [23]. In a similar way, [24] also observed that policy formulation on infrastructure development being undertaken with the least input of construction professionals at a macro-economic level hindered government investment on public projects. Besides, sensitive stages, particularly identification, definition, planning, and budgeting, for the infrastructure sector at macro-level have also been condemned to be dominated majorly by the executive arm of the government with least input from the construction professionals [22, 25]. By the way, the policy makers

who provide the blueprint for infrastructure development in both the national and state budgets lack adequate knowledge of the complex high-tech processes of construction and the cost characteristics of infrastructure construction, which are invariably critical to poor road infrastructure sustainability in Nigeria [24]. In other words, several authors, such as [14, 26, 27], among others, have carried out studies on this area, and their studies mainly focus on the government's investments in transport infrastructure and economic growth in Nigeria, but fail to examine how government investment in road infrastructure has affected urban mobility. This stands as the research gap that this study tends to reveal, especially with reference to Kogi State, Nigeria.

3. Materials and Methods

3.1. Study area

Kogi State, Nigeria was cut out of Kwara State and Benue State in 1991 and is one of the States in the North Central area of Nigeria with a population of 3,314,043. The State is situated between the latitudes $7^{\circ}30'N$ and $7^{\circ}52'N$ and the longitudes $6^{\circ}38'E$ and $6^{\circ}42'E$. Kogi State contains of twenty-one (21) local government areas and these are Adavi, Ajaokuta, Ankpa, Bassa, Dekina, Ibaji, Idah, Igalamela-Odolu, Ijumu, Kabba/Bunu, Koton-Karfe, Lokaja, Mopa-Muro, Ofu, Ogori/Magongo, Okehi, Olamaboro, Omala, Yagba East and Yagba West. The modes of transportation in the state include road and water transportation. Figure 1 shows a map of Nigeria showing Kogi state in a national setting.

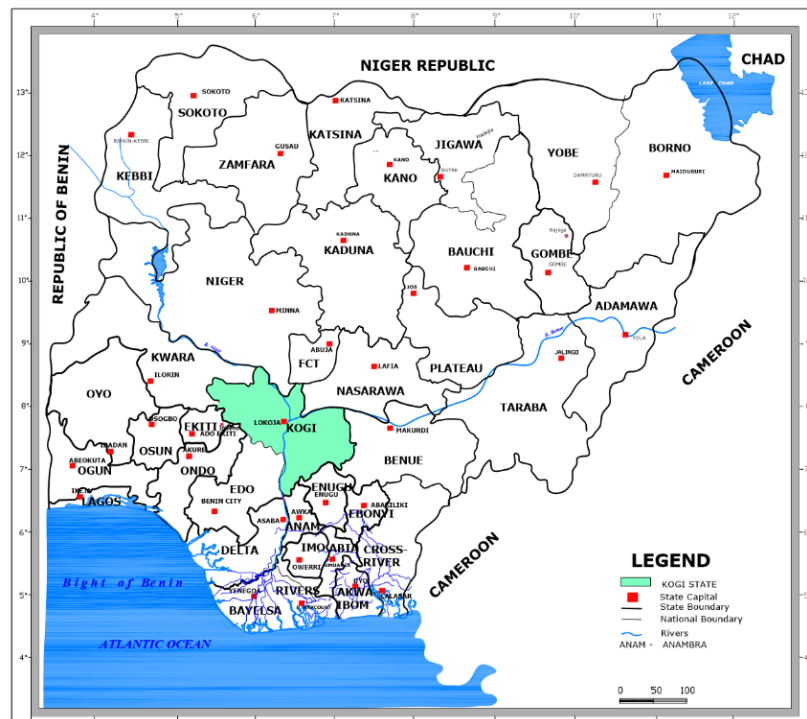


Figure 1. Nigeria showing Kogi State.

Sources: [1].

3.2. Methodology

A mixed-method research design that detailed the use of qualitative and qualitative data was adopted in this study. This was found to be appropriate due to the nature of the required data and the method of results presentation. Supporting the appropriateness of the research design is the study of [1, 3, 26, 27]. The study used both primary and secondary

sources of data, while structured questionnaires and personal observation were the primary sources of data employed. The population census figure for Kogi State obtained from the National Population Commission, Lokoja, and budgetary allocation to road infrastructure in Kogi State from 2008 to 2018, which was used as a measure for government investment in road infrastructure and was sourced from the Ministry of Budget and Planning and validated by the Ministry of Work and Urban Development, Lokoja, respectively, were the secondary data sourced for the study.

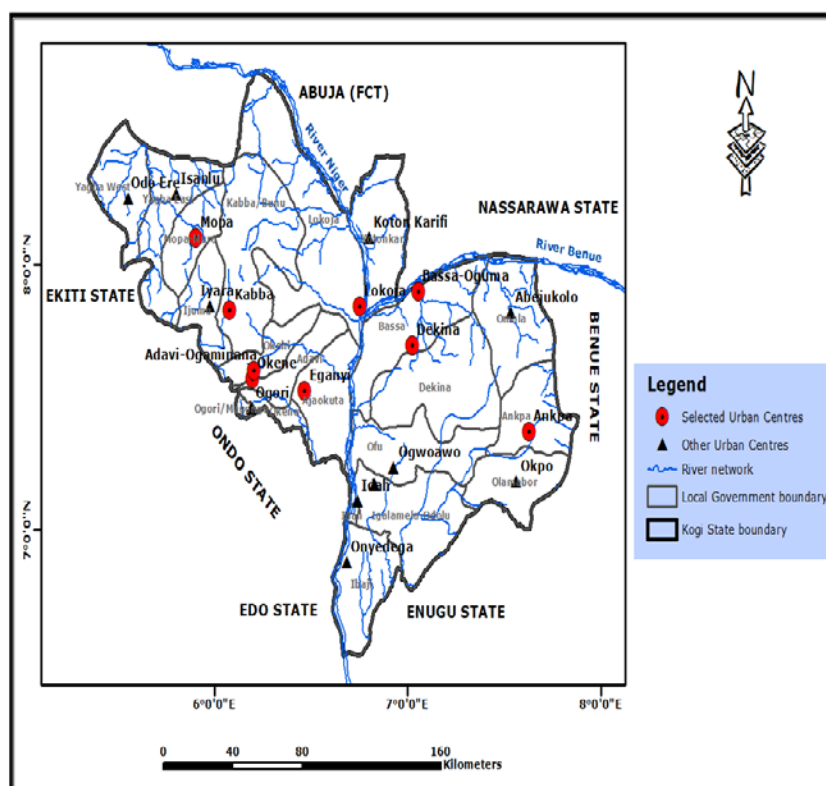


Figure 2. Kogi State showing selected Urban Centres for the Study.

For the purpose of determining the extent of the perceived impact of budgetary allocation to road infrastructure in Kogi State on urban mobility and the sample size for the study, the study selected respondents from nine (9) major urban centres, namely: Adavi, Okene, Ajaokuta, Kabba-Bunu, Lokoja, Ankpa, Dekina, and Bassa-Oguma. These urban centres represent the major economic hubs of the state and also generate a lot of traffic, especially on market days. The population census results from the 2006 National Population Census of the selected urban centers in the study area were obtained and summed up to be 1,717,087 people. This result was projected to 2018 at a growth rate of 2.8%, which amounted to 2,321,140, out of which 1658 of the household heads in the selected urban centres were sampled with the aid of structured questionnaires using a purposive and random sampling method. The purpose of the purposive sampling is to ensure that only urban dwellers (household heads) that reside in each of the selected urban centres are sampled, while the random technique is to ensure that individual household heads in each of the selected urban centres have an equal right to be sampled. The study administered one thousand, six hundred and fifty-eight (1,658) questionnaires to the household heads across the selected urban centres, out of which one thousand, two hundred and fifteen (1,215) were retrieved and analysed for the study (Table 1).

The data used to assess urban dwellers' perceptions of the extent of the impact of budgetary allocations to road infrastructure on urban mobility were presented with the aid of descriptive statistics. The variables used were measured on a 5-point Likert scale, and their weighted mean was also adopted as a decision rule to substantiate urban dwellers' perception of the extent of the impact of budgetary allocation to road infrastructure on urban mobility. The weighted mean scores used for the parameters by the study were sourced from the studies of [1, 28] where the level of impact as perceived by the respondents was ranked between intervals and reflected as 4.20–5.00 = (Highly Impactful); 3.40–4.19 = (Impactful); 2.60–3.39 = (Averagely Impactful); 1.80–2.59 = (Fairly Impactful); and 1.00–1.79 = (No impact).

Furthermore, annual budgetary allocation data from 2008–2018 was also analysed descriptively to determine the percentage of general budget allocation to road infrastructure, annual differences, annual budget performance of road infrastructure, annual rate of amount budgeted to road infrastructure, and annual percentage growth rate of the amount budgeted to road infrastructure, respectively. While inferential statistics techniques such as the Student "t" test and linear regression were used to establish the statistical difference in the road infrastructure development in the study area and the statistical influence of annual road infrastructure expenditure on the general state's sectoral budget, respectively. However, both the descriptive and inferential statistics were achieved through the use of the Statistical Package for Social Science (SPSS), IBM version 25.

Table 1

Summary of questionnaire administered

S/ N	Name of Settlements	X1 2006 Population Figure*	X2 2017 Projected Population Figure**	X3 Household Heads to be Sampled**	X4 0.005% of Household Heads (Sample Size)**	X5 Number of Questionnaire Received**
Urban Centres						
1.	Adavi	217,219	294,332	42,047	210	150
2.	Okene	325,623	434,707	62,101	311	205
3.	Ankpa	266,176	360,668	51,524	258	200
4.	Dekina	260,968	353,612	50,516	253	195
5.	Mopa-Amuro	43,760	59,295	8,470	42	35
6.	Kabba/Bunu	144,579	195,905	27,986	140	80
7.	Lokoja	196,643	266,451	38,064	190	150
8.	Ajaokuta	122,432	165,895	23,699	119	100
9.	Bassa	139,687	189,276	27,039	135	100
	Total	1,717,087	2,321,140	331,591	1,658	1,215

Source: *National Population Commission 2006,**X2, X3, X4 and X5 – Authors' computation, 2021.

4. Results

4.1. Government investment in road transport infrastructure for urban mobility

Government investment in infrastructure (roads inclusive) is normally captured in the annual budget. The government budget is the major instrument for the successful implementation of fiscal policy designed to attain specific objectives. Financial operations of the government are properly planned and administered through budgeting. The budget

provides a scientific and systematic way of presenting items of public expenditure and revenue. Provision of road infrastructure (construction of new roads, rehabilitation or maintenance of the existing ones) in Nigeria is dependent on allocations from the public treasury, which are sourced through the budget allocation to the Federal Ministry of Works at the federal level and the State Ministry of Work, respectively.

In order to determine the percentage of the amount budgeted for road infrastructure in Kogi State since 2008-2018, the total annual budget for the entire sector of the state and the budget for road infrastructure in Kogi State since 2008-2018 were sourced from the Ministry of Budget and Planning in Lokoja and presented in Table 2. From Table 2, it was revealed that out of the total annual budget for Kogi State in 2008, only 0.88% of the budget went to road infrastructure, and in 2009 (0.79%), 2010 (0.67%), 2011 (0.66%), 2012 (2.13%), 2013 (0.55%) and 2014 (0.53%). In 2015 and 2016, the percentage increased to 8.59% and 6.15%, respectively, while in 2017 it decreased to 0.96% and then increased to 4.23% in 2018. Although, according to the Ministry of Works and Urban Development Lokoja (2019) cited in Ref. [1], the variation in percentage allotted to road infrastructure in Kogi State is determined by the allocation received from the Federal Government.

It was also revealed from Table 2, that there was a discrepancy in the annual budgetary allocation of the State from 2008–2018. For instance, there was a positive increase in the budget allocation for the years 2009, 2011, 2012, 2015, 2016, and 2018 respectively. This may be due to the increase in federal allocation to the state during the above years. However, it was also revealed that there was a decrease in the budget allocation of Kogi State in the years 2008, 2013, 2014, 2016, and 2017 respectively. Considering the road infrastructure budget performance in Kogi State from 2008-2018 as presented in Table 3, it was discovered that there was a surplus of N 69,633,906.45 in 2008, N 58,157,935.00 in 2010, N 6,770,463.61 in 2014, N 134,433,920 in 2017 and N 2,562,500,000 in 2018. More so, there was a deficit of –N 55,800,000 in 2009 and N 380, 949,000 in 2012, respectively. Interestingly, there was a balance in the budget performance in the years 2011, 2013, 2015, and 2016 respectively.

Furthermore, the percentage growth rate of the amount budgeted for road infrastructure from 2008–2018 shown in Table 2 indicated that there was a mixed positive and negative percentage growth rate over the years between 2008 and 2018. The positive rates indicate a corresponding percentage increase in the amount budgeted for road infrastructure, while the negative rates show a corresponding percentage decrease in the amount budgeted for road infrastructure in Kogi State in comparison with the previous year. The height percentage growth rate accounted for 762.1% of the total recorded in the year 2015 (see Figure 3). This implies an increase in the amount budgeted for road infrastructure in Kogi State in the year 2015.

Reference [21] observed that the percentage growth rate experienced in the year 2015 was a strategy adopted by the then administration to ensure continuity of governance and road development in the State. A negative percentage growth rate of -63.5% was recorded in the year 2017. Although the pattern of fluctuation of the annual growth rates from 2008-2018 has not been stable concurrently, for instance, the percentage growth rate in 2009 accounted for 33.6% and 6.7% in 2011. Interestingly, the percentage growth in the amount budgeted for road infrastructure in Kogi State increased from 221.6% in 2012 to 271.9% in 2018. It was also indicated that there was a decrease (-14.7%) in the percentage growth rate in the amount budgeted for road infrastructure in Kogi State in 2010, with a decrease of 59.5% in 2013, -7.8% in 2014, and -39.5% in 2016, respectively. According to [21], the

decrease in percentage growth rate in the amount budgeted for road infrastructure was due to a reduction in the Federal Government's allocation to the State coupled with the economic meltdown impeding the State.

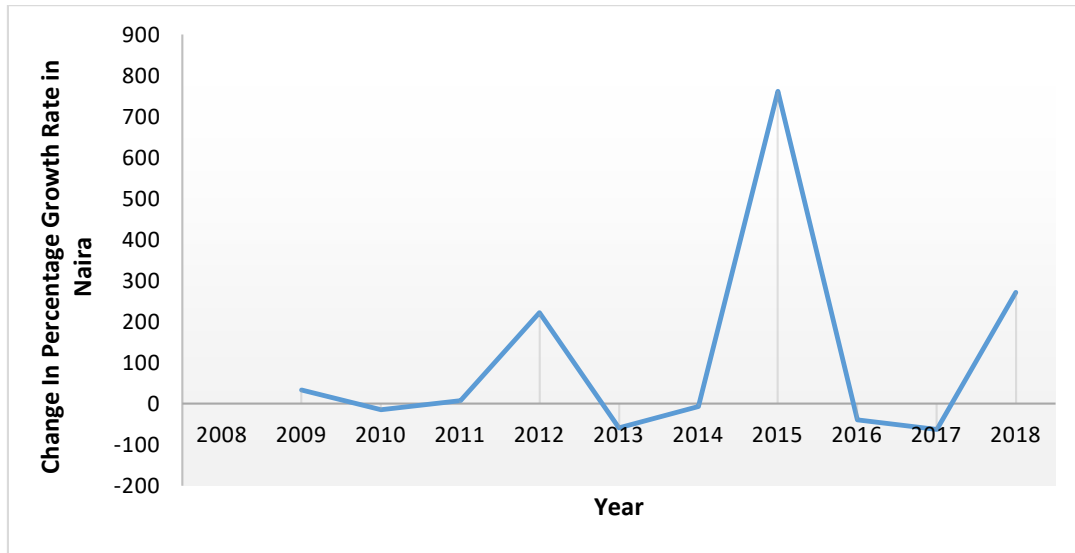


Figure 3. Percentage growth rate in the amount budgeted to road infrastructure in Kogi State from 2008-2018.

Source: Authors' field survey, 2021.

Furthermore, it is interesting to note that the year 2015 received the highest budgetary allocation for road infrastructure since 2008–2018, and the whole amount budgeted for the year was spent on road development in Kogi. This investment is evidenced by the reduction of road accidents experienced between 2015 and 2016 as revealed in Figure 4.

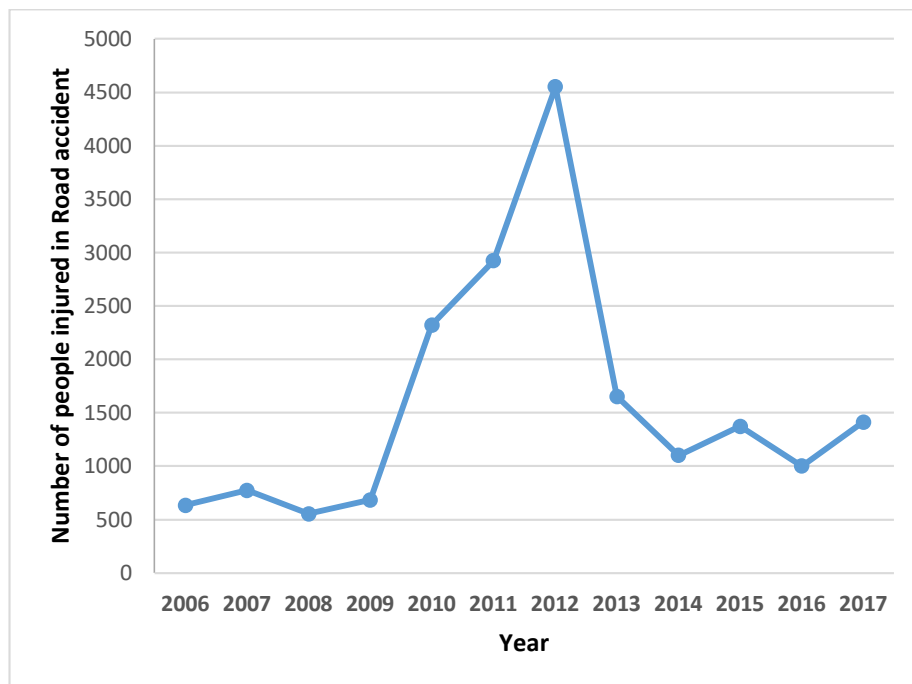


Figure 4. Trend of number of people injured in road accident in Kogi State from 2006-2017.

Source: Authors' field survey, 2021.

Table 2

Annual budgetary allocation of Kogi State to all sectors and proportion of budgetary Allocation to road infrastructure in Kogi State, Nigeria from 2008-2018

Year	X1 General Annual Budget of all Sector (in Billion Naira)*	X2 Proportion of Budget Allocation (in Million Naira) to Road infrastructure*	X3 % of General Budget Allocati on to Road infrastru cture **	X4 Annu al Differ ences **	X5 Amount Spent (Expenditur e) on Road Infrastructu re **	X6 Annual Budget Performance of Road Infrastructure **	X7 Annual Growth Rate of Amount Budgeted to Road infrastructure**	X8 Annual Percenta ge Growth Rate of Amount Budgeted to Road infrastruc ture **
2008	52,370,268,698	464,226,043.00	0.88		394,592,136.55	69,633,906.45 (Surplus)	-	-
2009	77,628,845,567	620,000,000.00	0.79	+	675,800,000.00	-55,800,000.00 (Deficit)	155,777,957	33.6
2010	78,537,755,346	528,708,500.00	0.67	-	470,550,565.00	58,157,935.00 (Surplus)	-91,291,500	-14.7
2011	85,588,476,370	564,000,000.00	0.66	+	564,000,000.00	Balance	35,291,500	6.7
2012	85,230,543,667	1,814,000,000.00	2.13	+	2,194,949,000.00	-380,949,000.00 (Deficit)	1,250,000,000	221.6
2013	132,676,855,415	734,401,394.00	0.55	-	734,401,394.00	Balance	-1,079,598,606	-59.5
2014	128,720,397,305	677,046,361.42	0.53	-	670,275,897.81	6,770,463.61 (Surplus)	-57,355,032.58	-7.8
2015	88,617,070,854	7,620,000,000.00	8.59	+	7,620,000,000.00	Balance	6,942,953,638.58	762.1
2016	74,996,241,381	4,609,621,422.00	6.15	-	4,609,621,422.00	Balance	-3,010,378,578	-39.5
2017	174,851,544,523	1,680,424,000.00	0.96	+	1,545,990,080.00	134,433,920.00 (Surplus)	-2,929,197,422	-63.5
2018	147,835,583,324	6,250,000,000.00	4.23		3,687,500,000.00	2,562,500,000.00 (Surplus)	4,569,576,000	271.9

Source: * X1-X2 Authors' field survey, 2021; ** X3- X8- Authors' computation, 2021.

In addition, [21] claimed that from 2008 to 2018, more than 80% of the amount allocated for road infrastructure was normally released by the government and spent on outlined projects. According to them, the amount budgeted and subsequently released for road infrastructure cannot, in most cases, complete the outlined projects due to sudden inflation in the cost of materials budgeted for. Because of this, most projects are kept in abeyance until adequate funds are made available for the completion of the project. Reference [24] stressed that to maintain and sustain road infrastructure that will have a relative impact on urban mobility in Kogi State, between 100 and 120 million should be released annually by the state government for the provision and maintenance of road

infrastructure. This is because Kogi State attracts heavy traffic from the Southern, Western, Eastern and Northern parts of Nigeria, coupled with the fact that the state is endowed with industries such as Obajana Cement Company, Itakpe Iron Company, Ajaokuta Steel Company, North-West Ceramic Company at Niger Bridge, Itobe, among others, that rely on truck for the movement of their finished goods in and out of the State. Corroborating the above, [24] declared that nothing less than 120 billion Naira is required annually to maintain and sustain the Nigerian roads. This amount is required because most vehicles plying the roads carry as much as 70 to 100 tons of load against their stipulated 30 ton designed capacity.

Nationally, it has been reported by [9] that road infrastructure has received a larger share of budgetary allocation compared to other modes of transportation. The government's significant commitment to the road sector can be seen in government investment or resources allocated to the sector over the last decades. For example, the road sub-sector, which accounted for 54% of the federal government's total public sector capital investment in transport planned right from the first national development plan till date, received not less than 70% of the allocation with a progressive yearly incremental allocation of resources related to other modes [9]. Nevertheless, the state of road infrastructure in Nigeria, in spite of the huge amount of money allotted to it, has become a subject of debate because the amount could not corresponding with the state of the roads in terms of a good road network, arbitrating from the observable and eye-catching proof and facts derivable from the road transport condition in the country [5, 9].

4.2. Trend difference in the road infrastructure development in the study area

Further investigation was carried out using a measure of annual expenditure on road infrastructure in order to determine whether there is a trend difference in the development of road infrastructure in the study area. This was achieved using student "t" test statistics and the result is presented in Table 3.

Findings from Table 3 show that there is a statistically significant difference in the road infrastructure development across the state in the observed period of years as the calculated p-value ($t = 3.021$, sig. 2-tailed = 0.000) reaches the level of significance (that is less than 0.05 table value).

The result indicates that the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted. Hence, by implication, the road infrastructure projects of the years in the study area might not have reached the desired result in terms of the impact of urban ease of commuting and navigation, but there has been a statistical difference in the road infrastructure projects over the observed period of years.

Table 3

One-sample "t" test statistics of the trend difference in the road infrastructure development

2		N	Mean	Std. Deviation	Std. Error Mean	
Road Infrastructure Expenditure		11	2106152772.3055	2312237346.29848	697165791.26537	
95% Confidence Interval of the Difference						
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Road Infrastructure Expenditure	3.021	10	.013	2106152772.30545	552770586.5113	3659534958.0996

Source: Authors' field survey, 2021.

4.3. Influence of annual road infrastructure expenditure on the state's general sectoral budget

In a bid to understand the statistical influence of the annual road infrastructure expenditure on the state's general sectoral budget, further investigation was conducted using linear regression analysis to explain not only the relationship between the state's general sectoral budget (dependent variable) and road infrastructure expenditure (independent/predictor variable), but also the extent to which the dependent is significantly influenced by the predictor variable. The result of the analysis is presented in Table 4 as the summary of the regression analysis of the statistical influence of the annual road infrastructure expenditure on the state's general sectoral budget. The result of the F-ratio of ANOVA (Table 4) in the regression model shows 92.776 with an observed significant value of 0.000. While comparing the observed significant value with the table level of significance, it is clear that the observed significant value ($p = 0.000$) is less than the table significant value (0.05). Hence, we accept the alternative hypothesis (H_1) and reject the null hypothesis (H_0). This implies that the annual road infrastructure expenditure statistics significantly influence the state's general sectoral budget. Furthermore, the model through the adjusted R square results (Table 4) shows 80% of the variation explained. This means that the independent variable (road infrastructure expenditure) is able to predict and explain the dependent variable's state's general sectoral budget with an 80% explained variation. In other words, every unit change in the state's general sectoral budget in the study area will cause a unit increase in road infrastructure development.

Table 4

Regression analysis of the influence of annual road infrastructure expenditure on the general state's sectoral budget

<i>Model Summary</i>						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.855 ^a	.812	.802	724787583.89322		
a. Predictors: (Constant), Kogi State Annual Budget						
<i>ANOVA^a Result</i>						
Model	Sum of Squares	df	Mean Square	F	Sig.	
1	487365620802823 50000.000	1	48736562080282350 000.000	92.776	.000 ^b	
	472785337589194 4400.000	9	52531704176577158 0.000			
	534644154561743 00000.000	10				
a. Dependent Variable: Road Infrastructure Expenditure						
b. Predictors: (Constant), Kogi State Annual Budget						
<i>Coefficients^a</i>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	128326503.03 6	299866969.213		.428	.679
	Kogi State Annual Budget	.851	.088	.955	9.632	.000
a. Dependent Variable: Road Infrastructure Expenditure						

Source: Authors' field survey, 2021

4.4. Impact of government investment on road infrastructure to urban mobility

Mobility is an integral part of human life. A man moves around to satisfy his needs in terms of visiting friends and family, leisure, shopping, among others. The comfort driven by mobility is directly connected to the level of transport infrastructure available. Evidence from this study (see Table 5) shows the respondents' perception of the impact of government investment on road infrastructure on urban mobility in Kogi State, Nigeria. The analysis of the results revealed that the majority of the respondents in the selected urban centres opined that the government's investment in road infrastructure for urban mobility is fairly impactful, as evidenced by Adavi, Okene, Dekina, Ajaokuta, and Lokoja. In Ankpa and Kabba-Bunu, it was impactful, while the situation in Mopa-Amuro and Bassa-Ogun showed no impact. The reason for this is that the majority of the roads connecting these areas have been abandoned or neglected, thereby making mobility difficult for the people in the area.

The urban dwellers' ranking of the impact of government investment on road infrastructure on urban mobility is a direct reflection of the visible and eye-catching evidence of dilapidated road conditions, poor traffic management, poor quality of transport service, inadequate road and traffic signs, among others, in Kogi State. In agreement with the above, [12] opined that lots of money has been spent and contracts awarded to revamp road infrastructure in Nigeria, with clear evidence from the budgetary allocation to the road sector, yet the effort has had little or no impact on mobility as revealed by road users due to corruption and failure to award contracts to qualified construction companies.

In the same vein, [29] averred that government investment in road infrastructure in Kogi State is fairly impactful on urban mobility. The Ministry noted that the bureaucratic process involved in budgetary allocation weakens the input-output of any projects (roads inclusive) in the state. The intermittent and under-approval of funds for projects tends to increase project cost, reduce project quality, and increase the risk of project abandonment. Where they are not abandoned, they are poorly maintained due to the paucity of funds.

Table 5

Impact of government investment on road infrastructure to urban mobility

S/ N	Urban Centres	Respondents perception of the impact of government investment on road infrastructure to urban mobility					Weighted Mean	Remark
		No impact	Fairly impactful	Impactful	Very impactful	Highly impactful		
1.	Adavi	10	80	35	21	4	2.5267	FI
2.	Okene	27	94	63	15	6	2.4098	FI
3.	Ankpa	22	20	90	38	30	3.1700	I
4.	Dekina	56	99	30	10	-	1.9692	FI
5.	Mopa-Amuro	14	21	-	-	-	1.6000	NI
6.	Kabba-Bunu	10	15	50	5	-	2.6250	I
7.	Lokoja	25	80	30	-	-	2.2333	FI
8.	Ajaokuta	32	60	8	-	-	1.8100	FI
9.	Bassa-Oguma	70	20	10	-	-	1.4000	NI

Note: Key Index Remark: 1.00-1.79 - D - (No Impact); 1.80-2.59 - FS - (Fairly Impactful); 2.60-3.39 - I - (Impactful); 3.40-4.19 - VI - (Very Impactful); 4.20-5.0 - HS - (Highly Impactful). *Source: Authors' field survey, 2021.*

5. Discussion

The major source of government investment in infrastructure is annual budgetary allocation to the Federal Ministry of Works at the Federal Government level and the Kogi State Ministry of Work, where provision is made for road transport infrastructure, including the construction of new roads and the rehabilitation or maintenance of existing ones. However, there is inconsistency in the proportion of budget allocation to the transport infrastructure sector over the years, with 0.88% of the total annual budget for Kogi State in 2008 recording the period with the least allocation. The effects of fluctuation in budgetary provision on transportation infrastructure include poor mobility performance and declining service quality of road transport infrastructure, whereas increased budgetary provision leads to increased road transport infrastructure development. This is in tandem with the position [1, 29] that investment in road infrastructure led to the reduction of road accidents experienced between 2015 and 2016, and the variation in percentage allotted to road infrastructure is determined by the allocation received from the Federal Government, the economic meltdown impeding the State and the condition of the internally generated revenue of the State. Also, the study revealed that between \$100 and \$120 million is required annually to maintain and sustain road infrastructure that will have a relative impact on urban mobility due to heavy traffic from all parts of the country that transits the state. Corroborating the above, [1] declared that nothing less than 120 billion Naira is required annually to maintain and sustain the roads. This amount is required because most vehicles plying the roads carry as much as 70 to 100 tons of load against their stipulated 30 ton designed capacity.

Furthermore, road infrastructure has received a larger share of budgetary allocation compared to other modes of transportation in the State. Corroborating the study of [1] that opined the road sub-sector accounted for 54% of the federal government's total budget for capital investment in transport from the first national development plan till date and received more than 70% of the allocation with a progressive annual incremental allocation of resources compared to other modes. Yet, the state of road infrastructure in Nigeria, regardless of the huge amount of money assigned to it, has become a subject of investigation because the amount allocated to road transport could not commensurate with the level of road infrastructure development especially in terms of a good road network, judging from the observable and eye-catching evidence. This is consistent with the findings of [7, 8, 30].

With respect to the trend difference in the road infrastructure development in the study area, it is revealed that there is a statistically significant difference in the road infrastructure development across Kogi state in the observed period of years. By implication, the road infrastructure development over the years in the study area might not have reached the desired result in terms of the impact of urban ease of commuting and navigation, but there has been a statistical improvement in the road infrastructure development over the observed period of years. This findings is novel.

Furthermore, on the relationship between the state's general sectoral budget and road infrastructure expenditure, findings revealed that the annual road infrastructure expenditure statistics significantly influence the state's general sectoral budget. By implications, the study revealed that for every unit change in the state's general sectoral budget in the study area will cause a unit increase in road infrastructure development. The findings corroborate the study of [10].

On the perceived impact of government investment on road infrastructure on urban mobility is varied across the state. Findings revealed that areas such as Adavi, Okene, Dekina, Ajaokuta, and Lokoja opined that the government's investment in road infrastructure for urban mobility is fairly impactful, while it simply impactful in Ankpa and Kabba-Bunu and have no impact on the mobility in Mopa-Amuro and Bassa-Ogun areas due to the fact that the majority of the roads connecting these areas have been abandoned or neglected, thereby making mobility difficult for the people in the area. Hence, the findings revealed a uniform impact level in the study area. In agreement with the latter, [11] opined that lots of money are been spent and contracts awarded to revamp road infrastructure across Nigerian communities, with clear evidence from the budgetary allocation to the road sector, yet the effort has had little or no impact on mobility as revealed by road users due to high level of corruption and failure to award contracts to qualified professionals. In the same vein, [1, 30] averred that government investment in road infrastructure in some part of Kogi State is fairly impactful on urban mobility due to the bureaucratic process in budgetary allocation that weakens the input-output of any projects (roads inclusive) in the state. This finding is in tandem with findings [10, 30] that the intermittent and under-approval of funds for projects tends to increase project cost, reduce project quality, and increase the risk of project abandonment. Where they are not abandoned, they are poorly maintained due to the paucity of funds.

6. Conclusions

This study has assessed government investment in road infrastructure and its impact on urban mobility in Kogi State, Nigeria. The findings of the study revealed that the year 2015 received the highest budgetary allocation for road infrastructure from 2008–2018. This is evidenced by the reduction of road accident experiences between the years 2015 and 2016 respectively. This study found that the road infrastructure projects of the years in the study area might not have achieved the desired result in terms of the impact of urban ease of commuting and navigation, but there has been a statistical difference in the number of delivered road infrastructure projects over the observed period of years in the study area.

Meanwhile, this study also found that the annual road infrastructure expenditure statistics significantly influence the state's general sectoral budget. By implication, it concludes that a unit change or increase in the state's general sectoral budget in the study area will cause a unit increase in road infrastructure development. Furthermore, our study findings also show that government investment in road infrastructure for urban mobility is fairly impactful based on the perception of the urban dwellers in Adavi, Okene, Dekina, and Lokoja. It was impactful in Ankpa and Kabba-Bunu, while the situations in Mopa-Amuro, Ajaokuta, and Bassa-Ogun showed no impact.

Based on the foregoing, our study concludes that there is a need to improve and increase the budgetary allocation for transport infrastructure development, especially for road infrastructure in the states, for improved mobility and logistics performance. As a result, this study recommended that budgetary allocations for road infrastructure in the areas of construction, rehabilitation, and maintenance should be given top priority in the state, taking cognizance of the fact that Kogi State is an intervening state that usually harvests traffic from the South, West, East, and North of Nigeria. This budgetary allocation should be adequately disbursed and judiciously spent on the outlined road projects. This could be done by specifying the spending plans for road infrastructure projects. Also, the Ministry of Works and

Urban Development in Kogi State and all other stakeholders involved in road provision should ensure proper monitoring and evaluation of road projects awarded yearly to ensure efficient and effective execution of projects. This can be done through constant supervision of the project sites by professionals in the field of road building at regular intervals till the end of the project. This will serve as a means of checking the quality of materials used for road construction and maintenance. An independent control and monitoring department should be established at state and local government level to control and monitor the activities of road project contractors for the purpose of achieving successful road project delivery that will ensure sustainability of urban mobility. This will go a long way towards impacting the lives of every road user in the state by ensuring seamless urban mobility.

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References

- Olorunfemi, S.O. Road infrastructure and urban mobility in selected urban centres in Kogi State Nigeria. Unpublished Ph.D. Thesis, Federal University of Technology Akure, Akure (Nigeria), 2021.
- Adeniji, K. Transport challenges in Nigeria in the next two decades. *Nigeria Institute of Social and Economic Research* 2000, 1(3), pp. 40-67.
- Salisu, U.O. State of transport administrative structure in Lagos, Ogun and Oyo states, Nigeria. *Journal of Spatial and Organizational Dynamics* 2019, 7(1), pp. 68-85.
- Akanmu, A.A.; Salisu, U.O.; Fasina, S.O.; Sanni, S.M.; Olatunji, O.M.; Faleti, C.A. State of urban transport in a Nigerian traditional city. *Transport and Communications* 2020, 8(2), pp. 1-12.
- Kendrick, P.; Copson, M.; Beresford, S.; McCormick, P. *Roadwork: Theory and Practice*, 5th ed.; Oxford: Elsevier Butterworth-Heinemann, Amsterdam, Netherlands, 2004; pp. 6-17.
- Abdulkareem, Y.A.; Adeoti, K.A. Road maintenance and national development. *Journal of Nigerian Society of Engineers* 2004, 35(3), pp. 20-28.
- Mayaki, H.M. *An evaluation of government provision and maintenance of infrastructures in Nigeria: The case of road transport infrastructure*. Unpublished M.Sc. Thesis, Ahmadu Bello University, Zaria (Nigeria), 2014.
- Central Bank of Nigeria. Highway maintenance in Nigeria: Lessons from other countries. Central Bank of Nigeria Research Department: Abuja, Nigeria, 2003.
- Hamza, Y. *An Assessment of Road Transport Infrastructure Development in Kaduna State, Nigeria*. Unpublished M.Sc. Dissertation, Ahmadu Bello University, Zaria (Nigeria), 2016.
- Salisu, U.O. Analysis of transport administrators in sustaining transport development in Lagos, Ogun and Oyo State, Nigeria. *Journal of Research in National Development* 2017, 15(1), pp. 191-203.
- Harrod, R.F. *Towards a dynamic economics*. Ed. Macmillan: New York, United States, 1948, pp. 56-76.
- Domar, E.D. Capital expansion, rate of growth and employment. *Econometrica* 1947, 14(2), pp. 137-147.
- Solow, R.M. A contribution to the theory of economic growth. *Quarterly Journal of Economics* 1956, 70(1), pp. 65-94.
- Adebosin, W.G.; George, E.O.; Salami, L.A.; Saula, D.T. Relative impact of transport infrastructure investment on sectoral growth in Nigeria. *EuroEconomic* 2019, 2(38), pp. 324-335.
- Hesse, M.; McDonough, E. Ports, cities and the global maritime infrastructure. In *Handbook on the Geographies of Globalization*; Kloosterman R., Mamadouh V., Terhorst P. Eds.; Edward Elgar Publisher, Cheltenham, United Kingdom, 2018; pp.5-15. <https://doi.org/10.4337/9781785363849.00038>.
- Adebosin, W.G.; Toriola, A.K.; Salami, L.A.; Saula, D.T.; Ayanwole, A.A. The effect of infrastructural investment on sustainable development in Nigeria (1980–2016). *Izvestiya* 2019, 2, pp. 148–163.

17. Suleiman, Y.; Ajayi, A.; Abass, S.; Rukaiyyat, O. The relationship between road infrastructure budgetary expenditures and commercial property investment returns. Case study of Fadikpe Area Minna, Nigeria. *Baltic Journal of Real Estate Economics and Construction Management* 2020, 8, pp. 187–196.
18. *Tax and road infrastructure development in Nigeria: The nexus*. January 2019. Available online: <http://blogs.worldbank.org/developmenttalk/how-roads-support-development> on 23th January, 2021 (accessed on 23 January 2021).
19. Ndubuisi, O. Taxation alternatives source of revenue Nigeria: a domineering evidence of petroleum profit tax. *European Journal of Business and Management* 2018, 10 (20), pp. 41-55.
20. Francis, P.U.; John, O.U. Urban infrastructure provision in Nigeria: A Critique of the Funding Strategy. *Saudi Journal of Business and Management Studies* 2017, 2(3), pp. 56-263.
21. Offem, B.; Atser, J. Social planning and good governance: A review of methodologies in infrastructural development and management in Nigeria. In *Physical Development of Urban Nigeria*; Ekop O.B. et al., Eds.; Development Universal Consortia, Lagos, Nigeria, 2007, pp.97-110.
22. Opawole, A.; Jagboro, G.O.; Babatunde, S.O.; Opawole, M.O. Critical factors in road infrastructure development in Osun state, south western Nigeria. *International Journal of Development and Sustainability* 2013, 2(1), pp. 240-253.
23. Babalola, O.; Babatunde, S.O.; Opawole, A. Financial probity in public projects procurement and millennium development goals. *Ife Journal of Environmental Design and Management* 2010, 4(2), pp. 15- 22.
24. Oforeh, E.C. The Nigerian institute of quantity surveyors As an Agent of Economic Development. In *Proceedings of the 22nd Biennial Conference and General Meeting of the Nigerian Institute of Quantity Surveyors*, Calabar, Nigeria, 22-25 November 2006.
25. Mogbo, T.C. The construction sector and the economic growth of Nigeria, 1981-1995. *Journal of the Nigerian Institute of Quantity Surveyors* 2001, 35(2), pp. 8-13.
26. Oyesiku, K.; Onakoya, A.B.; Folawewo, A. An empirical analysis of transport infrastructure investment and economic growth in Nigeria. *Social Sciences* 2013, 2(6), pp. 179-188.
27. Mohammed, A.M. Sustainable funding for the maintenance of critical urban infrastructure in Nigeria. *Kampala International University Journal of Social Sciences* 2021, 7(1), pp. 91- 102.
28. Fadare, S.O.; Adeniran, A.O. Comparative analysis of public operated airport terminal and concessioned airport terminal in Lagos, Nigeria. *Discovery* 2018, 54(272), pp. 304-318.
29. Olorunfemi, S.O. *Assessment of On-Street Parking in Lokoja, Nigeria*. Unpublished Master Thesis, Federal University of Technology Akure, Akure (Nigeria), 2013.
30. Gbadamosi, M.O.; Akanmu, A.A. Insufficient resources as bane of transportation development: The way forward. In *Proceedings of the 11th National Conference of the School of Business Studies*, The Federal Polytechnic, Ado-Ekiti, 5-7 October, 2018.

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