

Subnational Government Infrastructural Expenditure and Its Implication for National Economic Development: Evidence from the South West States, Nigeria.

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Abstract

Economic development is influenced by effectiveness of public spending on the developments of the social and economic sectors, to create opportunities for greater well-being. A nation's economic development is a shared responsibility among all levels of government in a federation. Studies have revealed the existence of a wide gap in the wellbeing and economic opportunities in Nigeria as a result of poor economic indicators. Extant literature provides a correlation between state budget implementation on infrastructure and economic development in developed economies, but there is paucity of study on the effect of budget implementation on infrastructure and economic development in South-West, Nigeria. Therefore, this study examined budget implementation on infrastructure and economic development (industrial manufacturing value added, unemployment rate) of South-West, Nigeria. The study adopted ex-post facto research design. The population of the study were the six States (Lagos, Ogun, Oyo, Osun, Ondo and Ekiti) in the South-West, Nigeria. The sample size of the study was the 6 states in the South-West using total enumeration. Validated data for the period 2001—2020 were sourced from the National Bureau of Statistics and published annual reports of the states. Data were analyzed using descriptive and inferential (multiple regression) statistics at 5% level of significance. The findings revealed that budget implementation on infrastructure had significant effect on industrial manufacturing value added ($F = 52.832$, $p = 0.000 < 0.05$), and unemployment rate ($F = 56.605$, $p = 0.000 < 0.05$) in the South-West, Nigeria. The study concluded that budget implementation on infrastructure enhanced economic development of states in South-West, Nigeria. The study recommended that the respective state governments should give priority to investment in infrastructure to bolster economic development of the states and that of Nigeria.

Keywords: Budget implementation, Economic development, Industrial manufacturing value added, unemployment, Infrastructure, Subnational government

1. Introduction

Governments have the overall economic objectives of ensuring sustainable economic development in order to provide economic and employment opportunities for all, and improve the quality of life of the people [34]. A nation's economic development is a shared responsibility requiring

complimentary and coordinated roles among all levels of government in a federation, as neither level can effectively provide the quantum of support for the economy without the contributions of the other. Public spending by the subnational governments is a significant portion of total government spending and accounts for half of nation-wide public spending, and this precipitates economic growth at the national and subnational levels [4; 15]. State government spending is critical to improving public investment in infrastructure due to their closeness to the local people, which afford them the opportunity to recognize areas of priorities [30], making it possible for them to design and implement placed-based policies capable of responding to local needs, and to match people preferences, in a manner that will help to address national and global challenges at the local level [46]. Indeed, state governments are being saddled with additional responsibilities through decentralization processes, and are expected to invest in the delivery of key public services including infrastructure [47; 74]. Given the level of public sector spending geared towards provision of infrastructure at the state level to provide service delivery that promote economic development, an empirical examination of whether states government expenditure on provision of infrastructure has any significant effect on national economic development prospect of the nation will provide an interesting empirical context. However there is paucity of study on the relationship between state government investment in infrastructure and economic development in Nigeria, as past studies in this area concentrated on the evaluation of the effect of federal government infrastructural development and economic growth and development

2. Review of Literature

The development of a country has been linked to different concepts, but it generally bounds economic growth induced by higher productivity [39]. According to [5] and [70], economic growth is the pathway to higher national income and attainment of economic development. Economic development is principally influenced by effectiveness of public spending [4; 20], on infrastructure and provision of key basic public services for the developments of the social and economic sectors, for exploiting opportunities for greater well-being. Infrastructure development is the capital to increase the economic productivity of a nation, region or district, and is a critical index of economic vitality covering numerous sectors that represent a large chunk of the economy [69]. Infrastructure systems services play a defining role in shaping the quality of life, production, distribution and consumption activities and environmental sustainability of the economies [37; 58]. Thus, infrastructure systems and services rendered bear the foundation for most of the social and economic activities in the societies, strongly influencing their environment, both in the short- and long-terms.

According to Keynesian theory public expenditure in providing basic facilities and key services serves as the exogenous factor available to the government to use as macroeconomic policy to promote economic growth and development both in the short-run and the long-run. Thus, an increase in public expenditure, according to the theory can boost employment, private sector investment and aggregate demand leading to increase national output [42; 52]. It is generally agreed that investment in infrastructure development, in addition to other general production factor, such as capital and labor, is a determinant of economic development. Infrastructure development is believed to have the ability to enhance the real sector, absorbs labor, invigorate the consumption of the people and government, thereby propelling higher productivity [76]. This claim was earlier observed by [26], when he stated that infrastructure is the leading capital whose accumulation can lead to economic growth, and that it is only by increasing investment in

infrastructure that the overall and balanced development of the national economy can be achieved [80].

As a macroeconomic policy instrument, public infrastructure investment exerts a direct pull effect on the economies, which is reflected in its contribution to GDP, as positive and rising economic growth signals the success of economic development having good impact on the economy [72]. Equally, it has a spatial spillover effect, which effect may be positive or negative on technology spillover, industrial docking, factor mobility efficiency, and localization decision. In terms of growth sustainability, infrastructure increases the dissemination of resources, promote the evolution and growth of knowledge capital, and act as technological wheel for sustained economic growth. [81]. A advent of new geo-economics is redirecting the focus of research concerning infrastructure investment from the direct output effect, to the spatial effect of contribution, and to the flow of production [80]. According to findings from studies, public infrastructure plays a connecting role of linking many regions, provinces and districts into a whole through tangible and intangible means. [80]. Infrastructure development delivers stability of economic growth, on one hand by splintering regional segregation, and hence enables small and closed markets to connect and achieve significant market size. Through this, it promotes spatial agglomeration which helps economic growth to surpass the effective threshold, overcome the defects of excessive fluctuations, and improves economic growth [81].

Empirical findings on the nexus between infrastructure and economic performance revealed positive correlation. For instance, some studies at the regional level found that infrastructure investment have a positive spillover effect on the social and economic conditions of the regions, with increasing economic growth that leads to increase in retail trade and decreasing level of poverty [36; 78]. In a study [25], used firm longitudinal data, and found substantial positive effects of infrastructure development on area level employment with increase in number of firms in addition to increase in output per worker. On the other hand, infrastructure can strengthen regional collaboration and spillovers. This was evident from the result of the study conducted by [28]. The study used Dubin model to examine transport hubs' externalities and found significant positive spillover effects which is capable of producing spillage and outflow which can dissipate industrial labor between different areas or regions and improve growth structural ability. [18], used the general equilibrium trade model concluded that investment on railroads infrastructure reduces trade costs, decreases interregional price gaps and increases trade volume.

[79], applied the fixed effect model approach to analyze data and concluded that public infrastructure offers opportunities that foster growth of industries, and thereby aligned with the conclusion of [54], that found public investment in infrastructure as engine for attracting investment and industrialization. [77], used the difference- in-difference method to evaluate the impact of railway infrastructure on economic performance. The study reported that infrastructure development has a robust and statistically significant impact on economic performance, as the railway project boosted the GDP of the areas that the railway passed through both in the medium and long term. [12], found evidence of spatial effect of transport infrastructure on economic growth in his analysis of the total investment and social output of transport infrastructure in Spain.

[8], conducted a study on railway construction in major country-level cities in China confirmed that inadequate infrastructure construction reduced information and new technology transmission success. The studies of [27], [33] and [43], analyzed panel data and found that increase investment in infrastructure and education exert positive and significant effect on employment by creating new jobs and indirectly reduce unemployment. (1), used regression model, while [24] used survey research. Both studies concluded that infrastructure development exerts a negative and significant

effects on unemployment, and thus concluded that infrastructure acts as catalyst for inducing employment. [51], used generalized method of moment estimation technique, and reported that investment in infrastructure development reduces unemployment rate both in the short-run and long-run with elasticity coefficient that range between 1.8 and 9.0. However, [3], through ordinary least square model found that infrastructure development is driven by unemployment and gross domestic per capital. [6], that availability of infrastructure creates the opportunities for attracting private investment (foreign and domestic), and provides the platform for expansion of industrial productivity. Similarly, [61], applied the generalized method of moment technique statistical analysis, their findings showed that infrastructure acts as incentive to attract foreign investment for industrial sector development. These results confirmed that investment in provision of infrastructure is key to the development of effective economic structure and national priority. Well-designed infrastructure is a critical driver of national economic and social prosperity, and is a pre-requisite for economic expansion and diversification, and for shaping future growth prospect [57].

3. Methodology

3.1 Research Design

The study adopted ex post facto research design, and used secondary data on budget implementation on road, health, education, housing and agriculture as proxies for independent variables, while data on industrial manufacturing value added and unemployment rate of each of the states for the same period were used as proxies for dependent variables. The population of the study was the six (6) states in the South-West, Nigeria, and this served as the sample size of the study. The study was conducted for the period of 20 years (2001 – 2020).

3.2 Data Treatment

The study focused on evaluation of the effect of state investment in infrastructure provision on the national economic development. Data collected were analyzed using descriptive and inferential statistics. Multiple regression analysis was used to determine whether the expenditure on infrastructure development of states in the South-West, Nigeria have any significant effect on economic development of the states and the nation. As a guide to evaluate the effect of the South-West states government infrastructure expenditure on the national economic development in Nigeria, the study raised the following hypotheses;

Ho1: Does states government expenditure on infrastructure development significantly contribute to industrial manufacturing value added in Nigeria?

HO2: Does state government expenditure on infrastructure development has any effect on unemployment rate.

4. Analysis and Results

The hypotheses formulated for this study were individually tested and the results of the statistical analysis carried out on the data of the sampled states compared with the benchmarked level of significance. The decision rule was to accept the alternate hypothesis and reject the null hypothesis if the significant value obtained was lower than the 5% 0.05 benchmark specified in IBM SPSS Statistical Software for the analysis and vice versa

Table 4. 1 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Industrial Manufacturing Value Added	20	49.13	157.53	77.75	31.68
Unemployment Rate	20	13.05	39.98	26.64	9.24
Budget Implementation on Infrastructure	20	14,358,663,343	64,219,675,103	64,219,675,103	14,063,027,379
Valid N (listwise)	20				

Source: Researcher's Computation using IBM Statistical Software (2023)

Table 4.2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.871 ^a	.759	.745	4.66214

a. Predictors: (Constant), Budget Implementation on Infrastructure

Interpretation

The descriptive analysis as shown in figure 5.2 revealed the average value of the figures represented in the appendices. Industrial manufacturing value added showed a minimum and maximum value of 49.13 million and 157.53 million respectively and a mean value of 77.75. Unemployment rate showed a minimum and maximum value of 13.05% and 39.98% respectively and a mean rate of 26.64%. Budget implementation on infrastructure had minimum and maximum value of 14.4 billion and 64.2 billion respectively and a mean value of 36.4 billion. The standard deviation expressed by how much the members of the group differed from the mean value for the group. Budget implementation on infrastructure had the highest value at 14.06 billion which was an indication that the variable must be studied closely as it contributes more to the sample study and is the most volatile. The value of R squared above in figure 5.1 is 0.759, which show that 75.9% of the national economic development can be explain by states government investment on infrastructure development while the remaining 24.1% can be explain by other factors not considered by the model i.e., residual. The above R squared shows that the model fit for prediction.

4.1 Hypothesis One

H01: There is no significant effect of budget implementation on infrastructure development on industrial manufacturing value added in States in South-West, Nigeria.

Table 4.3 : ANOVA^a

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	14225.955	1	14225.955	52.832	.000 ^b
	Residual	4846.805	18	269.267		
	Total	19072.760	19			

a. Dependent Variable: Industrial Manufacturing Value Added

b. Predictors: (Constant), Budget implementation on infrastructure

Source: Researcher's Computation using IBM Statistical Software (2023)

A one-way analysis of variance (ANOVA) whose results formed the basis for tests of significance was used. The result of ANOVA for the linear model presented in figure 4.3.1 of budget implementation on infrastructure and industrial manufacturing value added has an F value = 52.832 which was significant with $p\text{-value} = 0.000 < 0.05$, meaning that the overall model was significant in the prediction of industrial manufacturing value added in States of South-West, Nigeria. We therefore rejected the null hypothesis and accepted the alternative hypothesis which confirmed indeed that there was significant effect of budget implementation on infrastructure development on industrial manufacturing value added in South-West States of Nigeria.

Table 4.4: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	6.812	10.426		.653	.522
1 Budget Implementation on Infrastructure	1.946E-9	.000	.864	7.269	.000

a. Dependent Variable: Industrial Manufacturing Value Added

Source: Researcher's Computation using IBM Statistical Software (2023)

Interpretation: The regression model obtained above of $y = 6.812 + 1.946E-9x$ suggested that a unit increase in x (budget implementation on infrastructure development) will bring about corresponding increase in industrial manufacturing value added in States in South-West, Nigeria and contribute to economic development in Nigeria. Result of the statistical analysis shown in figure 4.3.2 revealed that there was a positive and statistically significant relationship between budget implementation on infrastructure development and industrial manufacturing value added in States in South-West, Nigeria. This was evident from the p-value obtained (i.e., 0.000) which is lower than the benchmark significance value of 5% specified for this analysis. Therefore, the null hypothesis was rejected and the alternate hypothesis accepted.

Hypothesis Two

H02: Budget implementation on infrastructure has no significant effect on unemployment in States in South-West, Nigeria.

Table 4.5 : ANOVA^a

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1230.335	1	1230.335	56.605	.000 ^b
	Residual	391.239	18	21.736		
	Total	1621.574	19			

a. Dependent Variable: Unemployment Rate

b. Predictors: (Constant), Budget implementation on infrastructure

Source: Researcher's Computation using IBM Statistical Software (2023)

A one-way analysis of variance (ANOVA) whose results formed a basis for tests of significance was used. The result of ANOVA for the linear model presented in figure 4.3.3 of budget implementation on infrastructure and unemployment has an F value = 56.605 which was significant with $p - \text{value} = 0.000 < 0.05$ meaning that the overall model was significant in the prediction of unemployment in the states in South-West, Nigeria. We therefore rejected the null hypothesis and accepted the alternative hypothesis which confirmed that budget implementation on infrastructure has significant effect on unemployment in the states in South-West, Nigeria.

Figure 4.6: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	5.778	2.962		1.950	.067
1 Budget Implementation on Infrastructure	5.722E-10	.000	.871	7.524	.000

a. Dependent Variable: Unemployment Rate

Source: Researcher's Computation using IBM Statistical Software (2023)

Interpretation: The regression model obtained above, $y = 5.778 + 5.722E-10x$ showed that a unit increase in x (budget implementation on infrastructure development) will bring about corresponding increase in employment with about 0%. Result of the statistical analysis shown in Figure 4.3.4 revealed that there was a positive and statistically effect of budget implementation on infrastructure development of states in South-West, Nigeria on unemployment in Nigeria. This was evident from the p-value obtained (i.e., 0.000) which was lower than the benchmark significance value of 5% specified for this analysis. Therefore, the null hypothesis was rejected and the alternate hypothesis accepted.

The result of hypothesis one showed that there was positive and statistically significant relationship between budget implementation on infrastructure development and industrial manufacturing value added in states in South-West, Nigeria. This was in agreement with the findings of [7] and [44], who observed a positive and significant influence of infrastructure on industrial manufacturing value added and growth. The authors concluded that the presence of infrastructure enhances investment environment attracting private investors. Similarly the aligned with the conclusion reached by [79], [54] and [6], that availability of infrastructure creates opportunities for attracting private investment and expansion of industrial productivity. Hence this study aligned with the findings of extant literature suggest that the manufacturing sector is an important that contributes to growth and development of any country when its full potential are harnessed.

The result of hypothesis two confirmed infrastructure development is a platform for creating employment and reducing the no of people who though are willing to work, but are out of job, reduction in unemployment rate. Job creation to a large extent plays a major role in the level of employment. This result is in line with the findings in the studies of, [1], [27], [33] and [43] which confirmed that infrastructure strongly effect employment by creating new jobs and opportunities for business expansion thereby reducing the rate of unemployment, Similarly, the study aligned

with the findings in [51] that presence of infrastructure increases opportunities and demand for labour, and also the findings by [25], that availability of infrastructure promote increase in number of firms thereby raises demand for labour, and increases output per worker.

6. Conclusion and Recommendation

The study addressed a significant gap in literature on the importance of subnational (state) government budget implementation on infrastructure on economic development. The study empirically examined whether infrastructure delivery by the states government in South-West, Nigeria significantly affect the states' economic development and contribute to the national economic development. The result of test of hypothesis one showed that infrastructure jointly and significantly impacted industrial manufacturing value of the states in South-West, Nigeria, thereby contributing to the growth of industrial base of the Nigerian economy. Similarly, the result of hypothesis two revealed that infrastructure jointly and significantly contribute to job creation, thereby reducing unemployment in the states in South-West, Nigeria, thus, contributing to creation of employment of opportunities in Nigeria economy. Overall, the study concluded that budget implementation on infrastructure development by the state governments of South-West, Nigeria contribute to national economic development

The study recommended that state governments in Nigeria should give priority to investment in infrastructure in their budget formulation and implementation to boost the economic development of the states as the attendant spillover of the state economic development will be felt throughout the national economy. Also the state government should ensure the spread of infrastructure to all parts of the states to foster inclusive economic development.

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