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Infrastructure Deficit and the Performance of Small and Medium-Sized Enterprise in the Post COVID-19 Nigerian Economy

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Abstract

Infrastructure is one of the most critical factors for economic development in the post-COVID -19 because it will interact with the economy through the production processes and this will greatly impact the production and performance of SMEs in terms of output, income, and employment. This paper examines the effect of infrastructure deficit on the performance of small and medium-sized enterprises in Benue State. The study is aimed at identifying the state of infrastructure and the effect of infrastructure deficit on the performance of small and medium-sized enterprises in Nigeria. Three stages random sampling technique was employedtoselect750 SME's in Nigeria. The study employed descriptive statistics and the Cobb-Douglas Production Function to analyze data. The descriptive statistics resultsshowthat88.9 percent of the SMEs emphasized that the state of infrastructure is poor in Nigeria while 79.1 percent of SMEs opined that poor state of infrastructure increased their cost of operation in the post-COVID -19. The Cobb-Douglas Production Function result showed that infrastructure deficit hurts the performance of small and medium-sized enterprises in Nigeria in the post-COVID-19. The study concludes that infrastructure has a multiplier effect on SMEs 'income. Deficiency infrastructure hampered the development of SME's and this translates in to a fall in income, low revenue to the government as well as increase unemployment. The study recommended that governments should make policies that are infrastructure driven in other to encourage and allow entrepreneurs to gain more access to infrastructure to reduce cost and enhance SMEs' performance.

Keywords: *Infrastructure Deficit, Employment, COVID-19, Performance, Economy*

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Background to the Study

Before the pandemic, the Nigerian government had been grappling with weak recovery from the 2014 oil price shock, with GDP growth tapering around 2.3 percent in 2019. IMF (202) revised the country's GDP growth rate from 2.5 percent to 2 percent, as a result of relatively low oil prices and limited fiscal space. Equally, the country's debt profile has been a source of concern for policymakers and growth experts as the most recent estimate puts the debt service-to-revenue ratio at 60 percent, which is possible to worsen amid the steep decline in revenue associated with falling oil prices.

In December 2019, a cluster of pneumonia cases from an unknown virus surfaced in Wuhan, China. Based on initial laboratory findings, the disease named Coronavirus disease 2019 (abbreviated as COVID-19) was described as an infectious disease that is caused by severe acute respiratory syndrome coronavirus 2. The COVID-19 outbreak has since spread to about 196 countries and territories in every continent and one international conveyance across the globe. While there are ongoing efforts to curtail the spread of infection which is almost entirely driven by human-to-human transmission, it has accounted for a huge number of confirmed cases and deaths around the world.

Beyond the tragic health hazards and human consequences of the COVID-19 pandemic, the economic uncertainties, and disruptions that have a significant cost to the global economy. The United Nations Trade and Development Agency (UNCTAD) put the cost of the outbreak at about US$2 trillion in 2020. In Nigeria, due to the constraining factors which will aggravate the economic impact of the COVID-19 outbreak, makes it more difficult for the government to upset the crisis. Despite positive economic growth in the last 3 years, Nigeria's GDP trajectory still falls short of the projections set in the Economic Recovery and Growth Plan (ERGP) of 4.5% and 7% for 2019 and 2020 respectively. The coronavirus pandemic has also generated a major economic crisis, with a halt in production in affected countries such as Nigeria, a collapse in consumption and confidence, and stock exchanges responding negatively to heightened uncertainties. While worldwide, the number of COVID-19 continues to increase in many countries and the lockdown containment measures are gradually being lifted.

Infrastructure is one of the most critical factors for economic development because it interacts with the economy through the production processes which will have a great impact on the production and performance of SMEs in terms of output, income, and profits in the economy (Adenikinju 2005; Kessides 1993). Despite the direct link between the availability and quality of infrastructures such as electricity, potable water, and poor road maintenance to economic development (Oseni and Pollitt, 2013). The availability of infrastructure in most developing countries especially in the sub-Saharan African region leaves much to be desired (World Bank, 2014). The gap in the availability of infrastructure in Nigeria for instance has a great impact on the production processes in the manufacturing sector, especially SMEs globally.

The Small and Medium-Sized Enterprises(SMEs) are those businesses operating in the formal manufacturing sector with the number of employees not above 300 or their capital base not above N200 million. The interest in manufacturing SMEs is driven by their high sensitivity to

external shock because of their limited resources (OECD, 2020). These SMEs are critical to the Nigerian economic development. According to the National Bureau of Statistics, SMEs in Nigeria have contributed about 48% - on average – to the national GDP in the last five years. Totaling about 17.4 million enterprises, they account for about 50% of industrial jobs and nearly 90% of activities in the manufacturing sector, in terms of the number of enterprises. Notwithstanding the significant contribution of SMEs to the Nigerian economy, the infrastructure deficit persists among others.

It is forth being reason that this study examined the effect to the state of infrastructure deficit on small and medium-sized enterprises in Nigeria. The study also investigates the effect of infrastructure on the operational costs of SMEs in the study area. The study is significant because it will serve as an immense benefit to policymakers by providing baseline information on the infrastructure that requires immediate attention to the improvement of small and medium scale enterprises. The study will also help to provide insight into how best government can re-address the infrastructure deficit up-scale SMEs performance.

Literature Review

Some studies looked at the relationship between information and communications technology (ICT) and firm growth. Okoli et al. (2010) obtained 316 perceptual responses through a questionnaire-based survey from both Sub-Sahara African and Latin American business experts and the results revealed that better ICT infrastructure increased the sales, profit, and some customers of small businesses. Similarly, Nganga, et al. (2011) in addition to other findings earlier discussed also found that there is poor access to internet and telecommunications services in Kenya leading to low productivity and poor growth rate of wood-based firms.

Also, back in Nigeria, Tatyana (2015) findings have been confirmed by the findings of Abdullahi et al. (2015) who also found that infrastructure (reliable internet and telecommunications services) has positive and significant effects on the profitability and growth of SMEs. This is further corroborated by Oluwaseun and Moruf (2018) who investigated the strength of ICT adoption on the growth of food and beverages (FB) SMEs in Lagos State, using a multi-stage sampling technique, with a sample of 225 questionnaires administered to both owners and employees of the selected FB SMEs. 200 questionnaires were collected and used for the analysis which revealed that ICT adoption has a positive effect on the profitability and growth of the selected Small and Medium Scale FB firms operating in Lagos (Oluwaseun and Moruf, 2018).

On water infrastructure, Limi (2011) investigates the effects of infrastructure quality and the cost of doing business. The study used firm-level data collected from 26 European and Asian countries through interviews of firms' managers to get their perception of whether regular availability of water has an impact on their firms' cost of operation and productivity. It was found that if the incidences of poor water supply are removed completely, firms are estimated to save more of their operating costs especially those in the manufacturing, construction, and hospitality industries thereby increasing their productivity and profitability.

Switching focus to strictly developing countries, Islam and Hylan (2018) investigated the effects of unreliable water supplies on the productivity of manufacturing firms. This was achieved by adopting the firm-level World Bank Enterprise Surveys (WBES) covering more than 16,000 manufacturing firms across 103 countries between the years 2009-2015. The study relied on the perception of the business owners and top managers obtained through the use of questionnaires for data collection. It was found that water shortages have a significant and negative impact on firms' productivity, meaning that constant water outages lead to lower productivity of manufacturing firms (Islam and Hylan, 2018). As for transportation infrastructure, Okpara (2011) used a subjective rating of firm growth in investigating the factors hindering the growth and survival of small firms in Nigeria. Using questionnaires, data were collected from 211 small business managers and owners in three selected commercial cities (Onitsha, Lagos, Abuja, and Aba) in Nigeria. The findings of the study revealed that poor road infrastructure increase transportation costs which erode the firms" profit (Okpara, 2011).

In another African country (Kenya) within the same year, Nganga, et al. (2011) also conducted a study to find the relationship between infrastructure availability and firms' growth. To achieve that, perceptual data was obtained from 284 wood-based firm owners/managers who were sampled from three Districts; Nakuru, Kericho, and Uasin in the Rift valley province of Kenya. After using observation and questionnaires as the instruments for data collection, it was found that the roads accessed by wood industries are poor, leading to poor efficiency, low productivity, and poor growth of the firms.

Furthermore, Moyo (2013) sought to investigate the effect of the quality of electricity supply on the productivity of manufacturing firms in African. 1,598 firms were surveyed from across five African countries including South Africa, Tanzania, Uganda, Zambia, and Mauritius. The number of hours per day without electricity and the amount of output lost as a result of power failures were used in measuring the quality of electricity supplied. Relying on the opinion/perception of the firm owners and top management-level employees of the firms investigated, the study found that poor electricity supply hurts manufacturing firms' productivity in Africa. Moyo's findings have been confirmed by the findings of Abdullahi et al. (2015) who also found that infrastructure (constant electricity supply) has positive and significant effects on the growth of SMEs (Abdullahi et al., 2015). Even the companies involved in the supply of electricity are not immune to the devastating effect of a constant power outage on their businesses.

To find the impact of improved electricity supply on the growth of the Transmission Company of Nigeria (TCN), Famous et al. (2017) study used TCN as a case study and surveyed 400 employees of the company using questionnaires. From the perception of the employees, the study found that the quality of electricity supplied by the company and distributed to final consumers (commercial and private) has not resulted to increase in the number of customers they have, neither had it increased consumers' satisfaction. Similar to Moyo's (2013) investigation of five African countries, but now on a larger scale, Bbaale (2018) adopted the World Bank Enterprise Survey of 26 African countries in examining the impact

of infrastructure quality on the productivity of firms in Africa. The study also found that poor electricity supplies are negatively associated with the productivity of small and medium firms in Africa (Bbaale, 2018).

Exogenous growth theory is used as the foundation for the theoretical framework of this study. The theory assumes that the growth of a firm is influenced by factors that are external to the firm. The conceptual framework for this study explained the importance of the infrastructure on small and medium enterprise productivity and income is described in Figure1.Goodinfrastructurecoulddeclinethe prices of goods purchased by the small-sized enterprise and increase their profit margin. The second editions resulted in a decline in the ratio of input purchased prices to sales prices, as shown by a movement from $_1v$ to $_2v$ inFigure1. Also, the infrastructure will lead to an increase in sales patronage. Improvement in knowhow can be represented by an upward shift in the production function (Total Production, TP) curve, from $_1TP$ to $_2TP$,and this will shift the marginal physical product (MPP) curve, from $_1MPP$ to $_2MPP$.

Assuming that the small and medium enterprise aims to maximize profits, as such the entrepreneurs' optimal input use in production goods will be achieved when MPP is equal to the input-output price ratio (v). Optimal input X use occurs before the infrastructure was achieved. That is when the input-output price ratioequalsi.e., at $_1X$.After infrastructure, the optimal input use occurs when the input-output price ratioequalsi.e., at $_2X$. The expansion in infrastructure will reduce cost due to an increase in savings which will lead to an increase in inputs for productivity, from $_1Y$ to $_2Y$,which in turn led to an increase in small and medium enterprise profit as shown from ABto DCin Figure 1.

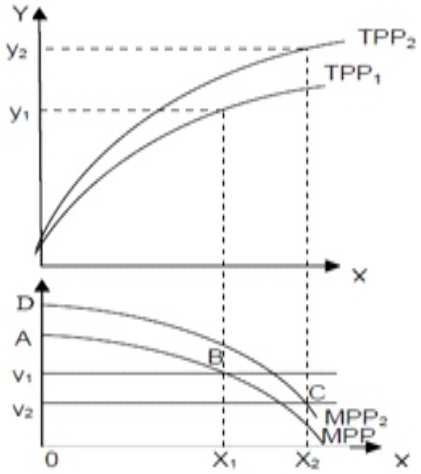

Figure 1: The impact of infrastructure on income and output of SMEs

Method

This study presents the methodologies employed which include multiple linear regression models. The method is used to establish the effect of infrastructure deficit on the performance of Small and Medium Scale Enterprise. It also used correlation analysis to determine the

linear relationship between infrastructure deficit and the performance of small and medium scale enterprises. In terms of infrastructure cost, the study adopts a modified self-assessment and adaptive method, which requires respondents to fill out a questionnaire that gives the estimated cost effect on their operating cost and profit level on self-provision and maintenance cost incurred on self-provision of infrastructure resulting from the absence of infrastructure needed for their operations. This study used cross-sectional and semi-structured interviews were also conducted in SMEs operating in three key states in Nigeria, this include; Lagos, Kano, and Kaduna State in 2020. The reason for the latest semi-structured interview is to find out whether there has been an improvement in infrastructure to SMEs.

This study used primary data sourced through the administering of questionnaires. A total of 750 questionnaires were distributed to owners of small and medium scale businesses within the study areas. Each of the three states selected is allocated with two hundred and fifty questionnaires, this is to avoid bias. Other sources of information used for the study include the internet, textbooks, journals, seminars, reports.

Theoretical Framework

The study adopts the Cobb-Douglas production function, in which the study assumes a generalized Cobb-Douglas production and extending the Neo-classical production model to include infrastructure available (i.e investment on transport infrastructure) as the input of the production function and the performance of SMEs as the output. This paper adapted Pravakar, Ranjau, and Gentanjali (2010) as well as Nwakeze and Mulikat (2010). The model can be specified as:

$$SMEP_i = f(FR, NEM, BYR, TAX, EXA) \quad (1)$$

$$LogSMEP_i = Log\beta_0 + \beta_1 LogFR_i + \beta_2 LogEM_i + \beta_3 LogBYR_i + \beta_4 LogTAX_i + \beta_5 LogINFRA_i + \mu_i \quad (2)$$

However, the variables used are monthly turnover which is used to the proxy performance of SMEs in the study area ($SMEP_i$), infrastructure (INFRA) and other control variables such as the number of employees (NEM), tax, years of business (BTR) as well as the expenditure on the alternative infrastructure(EXIN).

Results and Discussion

Table 1 showed that the level of infrastructure in Nigeria is very poor and has affected the performance of SMEs as indicated by the majority (58.8 percent) of the respondents while30.1% said it is poor. When the two views of respondents who believed that the state of infrastructure is very poor and poor are added, it shows that 88.9 percent emphasized that the state of infrastructure is poor in Nigeria. However, a very insignificant number (2.2 percent) of the respondents specified that infrastructure was good, while 8.9 percent believe that it was adequate.

The effects of infrastructure on the operating costs and profits of sampled SMEs were analyzed, the result showed that the majority 79.1 percent) of respondents declared that the poor state of infrastructure increased their cost of operation in the post COVID-19. This is

further supported the 93.5 percent of the respondents who said they generated their own power. This partially explains the reason for SME's high operational costs in the post COVID-19. While only 8.7% appealed that the level of infrastructure did not have any effects on their operating costs in the post COVID-19. Mostly, the cost of buying and maintaining power generating sets is quite high, because of import costs given the devalued Naira and the cost of fuel.

Table 1: The Level of Infrastructure in Nigeria

Items under consideration	**No. of firms**	**Percentage**
Level of infrastructure		
Good	8	2.2
Adequate	33	8.9
Poor	111	30.1
Very poor	217	58.8
Total	**369**	**100**
Effect on operating cost		
Increase	292	79.1
Decrease	45	12.2
No effects	32	8.7
Total	**369**	**100**
Effect on profits		
Increase	31	8.4
Decrease	290	78.6
No effects	48	13.0
Total	**369**	**100**
SMEs that generate own power		
Yes	345	93.5
No	23	6.2
Others	1	0.3
Total	**369**	**100**

Source: Survey 2020

The respondents also noted that fuel was scarce, especially as a country that is ranked the seventh-largest producer of crude oil in the world. The majority of the respondents also reported a decrease in profit. The competitive market situation made it impossible for most SMEs to transfer some of their costs to the final consumers. But very few SMEs produce consumable goods that have a very short shelf life and cannot be easily imported without heavy losses because of their perishable nature. Although 8.4% did report they experienced an increase in profits despite the competition, with the majority (78.6 percent) testified decrease in profits, while13% did not notice any changes to their profit situation in the post COVID-19. More so, 93.5% believed that infrastructure would be cheaper and cost-effective if there is a regular power supply from the Power Holding Company. This is because 95.9% believe that their performance would greatly improve when the state of infrastructures such as power supply, good access roads, and communication facilities available to them are improved. Finally, the majority of the respondents posited that they provide their infrastructure which is an indicator of infrastructure deficit.

Impact of infrastructure on the income of Small and Medium-Sized Enterprise

The OLS regression result in Table 2 reveals that the intercept is-24278.4 meaning that when INFRAS, tax, years of business, number of employees, expenditure on alternative infrastructure, and wages and salaries are zero, monthly turnover will go down by about N24,278. INFRAS appears to have a positive impact on monthly turnover as indicated by coefficient 422.506. This indicates that for a one-naira it increases in INFRAS, the monthly turn over will be increased by aboutN422.506. While Tax coefficient (-67.332) appears to impact negatively on monthly turnover. This implies that one-naira increase in tax, would on average, decreases monthly turnover by about N67.332holding other variables in the model constant. This value is statistically significant at the 5% level. The coefficient years of existence of business (32753.34) has a positive and statistically significant impact on monthly turnover in the post COVID-19.

The implication is that for each year increase in the age of the business, will lead cause an increase in monthly turnover of about N32753.34. This result should that old businesses tend to have large turn over than newly established businesses. The number of employees also has a positive and statistically significant impact on monthly turnover. This shows that a one percent increase in the number of employees will increaseaboutN19052.11in the post COVID-19. Similarly, expenditure on the alternative power supply has a negative and significant impact on monthly turnover as suggested that increasing expenditure on alternativeinfrastructurebyN1, will lead to a decrease in monthly turnoverbyaboutN-7.218.

Similarly, wages and salaries have a positive impact on monthly turnover as suggested by its coefficient 6.413 indicating that for every N1 increase in wages and salaries, the monthly turnover will result inaboutN6.413 increase. The coefficient of determination shows that about 65% of the variations in monthly turnover is explained by the variations in INFRAS, tax, years of business, number of employees, expenditure on alternative infrastructure, wages, and salaries. The remaining 35% is explained by other factors outside the model. The F – statistic23.211withthe p-value0.000 indicates that all the explanatory variables are important at influencing monthly turnover. However, there is evidence of positive serial correlation of the first order although it is of less importance in this case.

Table 2: Regression Result on the Impact of infrastructure on the income of Small and Medium-Sized Enterprise

Variable	coefficient	S.E	t-Statistic	Prob.
C	-24278.4	104415.2	-1.434304	0.0456
INFRAS	422.506	677.3835	0.479205	0.0332
TAX	-67.3321	8.500192	-2.103137	0.0388
BYR	14797.17	9894.605	1.495478	0.0390
NEM	19052.11	26605.53	0.716096	0.4762
EXIN	7.217938	2.495819	2.892012	0.0050
WAG&S	6.412635	2.639445	2.429539	0.0175
R-squared	0.649971			
Log-likelihood	-1118.139			
F-statistic	23.21133			
D.W stat.	1.7806			
Durbin-Watsonstat	0.965809			
WaldF-statistic	13.38326			

*significant at 5% level; ** significant at 1% level; *** significant at 10% level
Source: Computed from survey data, 2020.

Conclusion and Policy Implication

The study analysis infrastructure deficit and the performance of small and medium-sized enterprises in the post-COVID-19 Nigerian economy. The findings of the study show that majority of the small and medium-sized enterprises declared that the state of infrastructure in the country is poor and this has increased their cost of operation. This infrastructure deficit creates unhealthy competitiveness among small and medium-sized enterprises. However, the econometric analysis shows that INFRAS has a positive impact on monthly turnover while the tax variable hurts monthly turnover as supported by the alternative infrastructure supply expenditure which has a negative and significant impact on monthly turnover. The study recommended that hence infrastructure requires huge investment and government allow can provide efficient infrastructure as such public-private professional partnerships require closing the gaps. This can be done through public private partnership professional (4Ps) to close the infrastructure gap for survival of SMEs in the post COVID-19. Taxable income to businesses should be moderate hence taxation is vital for the performance of small and medium sized businesses in the post COVID-19. On the other hand, the collected tax should be invested in infrastructure to enhance availability and efficiency in supply of infrastructure. The study recommended that governments should make policies that are infrastructure driven in other to encourage and allow entrepreneurs to gain more access to infrastructure to reduce cost and enhance SMEs' performance. Government should provide should provide palliatives inform of loans to reduce the cost incurred by small and medium sized businesses in providing infrastructure.

References

Abdullahi, I., & Sanz-Valle, R. (2015). Effects of training on business results, *The International Journal of Human Resource Management, 14* (6), 956-980.

Adenikinju, A. (2005). *Analysis of the cost of infrastructure failures in a developing economy: The case of the Electricity Sector in Nigeria*, AERC Research Paper 148, African Economic Research Consortium, Nairobi.

Bbaale, I, & AL-Mahrouq, M. (2018). *Small and medium enterprises (SMEs): Concepts, characteristics, importance, merits and obstacles*, a paper prepared at small enterprises: An effective tool to address poverty forum, Yarmouk University Jordan 29-31 July.

Famous, J. (2017). *What in the world is infrastructure?* PEI Infrastructure Investor (July/August): 30–32.

International Monetary Fund (IMF) (2012*). Cyclical upswing, structural change: World economic outlook,* April. Washington, DC: Author.

Islam, G. & Hylan, E. (2018). Cost and marketing implications of electric power failures on high income households in Lagos, *The Nigerian Journal of Economic and Social Studied, 24*(2), 169–184.

Kessides, C. (1993). *The contributions of infrastructure to economic development: A review of experience and policy implications*, World Bank Discussion Papers No. 213, the World Bank, Washington DC.

Limi, N. (2011). *Infrastructure, demographical disadvantage and transport cost. Policy research*, Working. The World Bank Washington, DC. p.2257.

Nganga, Y. C., & Siu, N. Y. (2011). Training and enterprise performance in transition: Evidence from China, *The International Journal of Human Resource Management, 15* (4-5), 878-894.

Nwakeze, S. & Mulikat, D., (2010). Institutional paradigm and the management of transitions: A sub-Sahara African perspective, *International Journal of Social Economics 31* (1/2), 111–130. http://dx.doi.org/10.1108/0306829041051545

Olugbenga, A. A. (2013). Policy support and performance of small and medium scale enterprises in South-West Nigeria, *European Journal of Business and Management, 4* (9), 10-18.

Oluwaseun, E. & Moruf, S. (2018). Problems and prospects of small and medium scale industries in Nigeria, *CBN seminar on small and medium scale, 2001-2003; 2* (2):33-35.

Okoli, W. O., Gathungu, J., & Obonyo, P. (2010). The effect of business development services on performance of small and medium manufacturing Enterprises in Kenya, *International Journal of Business and Social Research, 4*(6), 12-26.

Okpara, J. O. (2011). Factors constraining the growth and survival of SMEs in Nigeria: Implications for poverty alleviation, *Management Research Review, 34*(2), 156-171.

Oseni, M. O. & Pollitt, M.G., (2013). *The economic costs of unsupplied electricity: Evidence from backup generation among African firms*, Energy Policy Research Group Working Paper 1326, Cambridge Working Papers in Economics 1351, Cambridge University Press, Cambridge

Pravakar, G., Ranjau, F., Gentanjali, U. (2010). The Role of Nigerian Investment Promotion Commission (NIPC) in attracting Foreign Direct Investment in Nigeria, *European Scientific Journal*, 8 (7), 149-161.

Tatyana, P. (2015). Assessing the impact of infrastructure on economic growth and global competitiveness, *Procedia Economics and Finance, 2*3, 168-175

World Bank (2014). *Building integrated markets within the East African Community: EAC opportunities in public-private partnership approaches to the region's infrastructure needs,* International Bank for Reconstruction and Development/ World Bank, Washington, DC. (OECD, 2020).