Innovations

The Impact of Government Expenditure on Innovation in Nigeria: An Empirical Analysis

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Abstract:

Innovation can be considered as something inventive, fresh, and unique. It could also be in the form of renewing or changing the way something has been done in the past. The broad objective of this study is to investigate the long-run impact of government expenditure on innovation in Nigeria; specifically, to examine the long-run effect of both capital and recurrent expenditure on innovation in Nigeria. The study made use of Schumpeter's Theory of Innovation as an underlying theory for study. The study employed the Johansen cointegration test and error correction model as analytical techniques for this study. The study discovered that there exists a long-run relationship between government expenditure and innovation in Nigeria. The result of error correction modelis negative and significant. It indicates that previous period's deviation from long run equilibrium is corrected in the current period at an adjustment speed of 2.27%. The coefficient reveals that the speed of adjustment between the short-run and long-run realities of the cointegrating equations is 2.27% in a period. Based on the findings the study recommended that since there is a long-run relationship between innovation and government expenditure, there is a need for government to increase both capital and recurrent expenditure to boost research and development in Nigeria which will have a transmission impact on the economy. The study also recommended the need to innovate both public-private partnership investments in Nigeria.

Key Words: *Capital expenditure, Innovation, Government expenditure, Recurrent Expenditure*

Introduction

Government spending on research and development (R&D)is designed to generate future growth. As a key driver of innovation in both developed and emerging countries, it cannot be overstated. Governments have a key role in subsidizing higher education and basic research, which serves as the foundation for firms' own R&D. This highlights the importance of fiscal policy in encouraging private R&D investment, (Nuru & Gereziher, 2021; Zhang, Mohsin, Rasheed, & Chang 2021). Government investment is one of the factors of innovation capability, according to the National Innovation System hypothesis (Kong, 2020; Le & Ozturk, 2020) and the Triple Helix theory (Etzkowitz&Leydesdorff, 2000). While most people believe that having a functioning government is necessary, how government should function remains a point of contention, particularly what role government should play and how it can participate in innovation (Babajide, Okunlola, Nwuba, & Lawal, 2020; Iyoha and Oyerinde, 2010; Omodero&Alege, 2021). The dispute has raged on for decades, with no end in sight, in part, because measuring the influence of government spending on innovation

is difficult given the presence of different confounding factors. The study attempts to examine critically the contributions of government spending on innovation in Nigeria.

Scholars contend that even commercial firms that benefit the most from innovation, particularly technical innovation, do not invest enough in R&D, which is the foundation of innovation, for two reasons. First, even if the efforts are expected to yield big returns, businesses usually struggle to fund riskier R&D investment projects. This is especially true during recessions when financial constraints are more prevalent. Previous research findings, such as(Kondratenko, Okopnyk, Ziganto, & Kwilinski, 2020; Zhou, Zeng, Jiang & Xue, 2020)determined that government spending that aids in production stabilization considerably increases private R&D investments and promotes productivity growth,(Chien, Ngo, Hsu, Chau, & Iram; 2021).

Second, firm R&D investments boost the overall economy. For example, researchers in technical hotspots in developed economy, such as Silicon Valley in California, exchange knowledge and ideas; technology represented in new goods or equipment can be duplicated by others or inspire follow-on inventions. However, while selecting how much to invest in R&D, a single corporation will not consider these spillovers(Kondratenko et al., 2020; Zhou et al., 2020). According to an IMF (2018)study, fiscal incentives cut the firm's cost of investing in R&D by 50% on average in advanced economies, encouraging firms to perform more R&D, which leads to innovation. This would efficiently harvest the benefits for the larger economy. A similar fiscal incentive would enhance R&D by around 40% and GDP in advanced economies by 5% in the long run (Dutta, Lanvin, Leon, Wunsch, & Vincent 2021).

Many elements pose major hurdles to innovation in Nigeria, including institutional framework, human capital, research/innovation infrastructure, and a savvy corporate community, and it is therefore advised that the government develop policies to solve the issues in innovations(Fayomi, Okokpujie, & Fayomi, 2019). Against this backdrop, this study set out to evaluate the contributions of government expenditure on innovation in Nigeria, which has thus become critical to ascertain. The broad objective of this study is to investigate the long run impact of government expenditure on innovation in Nigeria; specifically, to examine the long run effect of both capital and recurrent expenditure on innovation in Nigeria. The research question that this study asked is, what is the long run relationship between both capital and recurrent expenditure and innovation in Nigeria? This study is divided into five sections. Section one is the introduction, literature review in section two. Section three is method, four results and discussion of findings. Section five is conclusions and recommendations. References follow immediately.

Literature Review

The review of literature focuses on prior studies conducted by other scholars on government spending and innovation. In a developed economy, public spending maintains a smooth rate of growth through economic stabilization, stimulation of investment activity, and so on. In a developing country, public expenditure actively contributes to the elimination of regional imbalances, the improvement of social overheads, the construction of communication facilities, education and training, the creation of capital goods industries, basic and important industries, R&D, and so on (Bhatia, 2002). Infrastructure spending by the government has a big impact on the economy. Government investment in public infrastructure is expected to have a significant impact on the rate of economic growth, which is significantly influenced by the shape and quantity of overall public spending on economic and social development projects in the economy. When the government spends, money may be directed to specific investments or trigger a reallocation of investible resources in the private sector. This effect is thus essentially a reallocation of resources from less desirable to more favorable sectors of investment(Babajide, et al, 2020).

One key method that government spending might increase economic growth is through closing the gap between social and private marginal productivity of investments. In this case, public expenditure on social and economic infrastructure such as education, health, transportation, communication, water disposal,

electricity, water, and sanitation, among others, has the potential to contribute to the economy's performance based on the following criteria: Promotion of infant industries in the economy; Reduction in the unemployment rate; Stabilization of general prices in the economy; Reduction in the poverty rate and increase in the people's standard of living. In tracking the work of Rosto and Musgrave, they proposed a development model as one of the drivers of increased public spending. Public spending is required for economic progress under this concept. Economic infrastructure such as roads, railways, water supply, and sanitation are initially provided by the public sector. As the economy grows, the balance of public investment shifts toward human capital development, as spending on education, health, and welfare services increases. The state is believed to evolve like an organism in this concept, making decisions on behalf of the population. Society's demand for infrastructure, such as education, health, power, and transportation, is growing faster than per capita income(Bhatia, 2002).

Several scholars have provided useful definitions of the concept of innovation. Some of these scholars include Joseph Schumpeter (1930), who defined innovation as the introduction of a new product or the modification of an existing product; a new process of innovation in an industry, the discovery of a new market; the development of new sources of raw materials; and other organizational changes (Frank, 1998; Popa, Preda, &Boldea, 2010). Kenneth Simmonds (1986) defines innovation as "new ideas that include new products and services, new uses for existing products, new markets for existing products, or new marketing approaches." Lumpkin and Dess (1996) described innovation as a process that adds value and uniqueness to an organization, its suppliers, and customers by producing new procedures, solutions, products, and services, as well as new marketing methods(Dess & Lumpkin, 2005). According to the Business Council Australia (1993), innovation is defined as the introduction of new or considerably improved aspects to bring value to the firm directly or indirectly for its consumers(Rogers & Rogers, 1998).

The definition of innovation has attracted the curiosity of both researchers and many sectors. It is thought that the way innovation is defined within an organization determines which activities will take place within the company and which will be outsourced. Regarding the notion of innovation, scientists and industry took several approaches from various angles, including drastic or incremental improvements in products, processes, and markets. The degree and nature of innovation in a specific company are determined by the concept of innovation. Because of the innovation process, how businesses describe the concept of innovation has a significant impact on innovation. This emphasizes several significant implications for organizations and ushers in a new era of management innovation. The essence of this innovation is to translate into robust business environment that will impact economic growth.

Damanpour, (1991) differentiates three types of innovation: administrative innovation vs technical innovation, process innovation versus product innovation, and radical innovation versus incremental innovation. Products, services, and technology employed in the production process are examples of technological advancements. They are concerned with an organization's essential functions and are concentrated on the product or process (Damanpour& Evan, 1984; Knight, 1967). This style of creativity is encouraged by a high level of professionalism, little formalization, and low centralization. Administrative innovations include changes to organizational structure as well as administrative processes. These innovations are related to the organization's basic activities indirectly and more directly to the management of those activities (Damanpour & Evan, 1984; Kimberly & Evanisko, 1981). Low levels of professionalism, strong formalization, and high centralization enable administrative innovation.

There are several theories of government expenditure and innovation which were propounded by scholars in the time past. This study will look at some of these theories for the purpose of this study. The theory of government expenditure can be investigated in terms of increasing government expenditure, the spectrum of government expenditure, and/or the division of a specific amount of government expenditure into different

components such as recurrent and capital expenditure. The latter of the two parts can also be conceived of in terms of how the economy's resources are allocated between delivering public goods and private products.
The first is associated with Wagner, while the second is associated with Wiseman and Peacock. On the one hand, Wagner proved that different levels of government (such as federal, state, and municipal governments) have inherent impulses to expand their operations both intensively and broadly. He asserted that there is a functional relationship between economic growth and government activities, with the result that the government sector grows faster than the economy. However, (Alamanda, 2020; Aluthge, Jibir, & Oruta, 2021; Samuel & Oruta, 2021)not only backed Wagner's argument but also determined, using actual evidence, that it was equally applicable to a number of other regimes that differed greatly from one another (Gurdal, Aydin, & Inal, 2021; Muritala & Taiwo, 2011).
All types of governments, regardless of their levels (say, central or state government), goals (peaceful or warlike), size, and so on, had the same tendency to increase public expenditure. However, Wiseman and Peacock discovered in their study of public expenditure in the United Kingdom from 1890 to 1955 that it does not increase in a smooth and continuous manner, but rather in a jerk or step-like form. Occasionally, a social or other disruption occurs, necessitating additional public expenditure that the present public revenue cannot satisfy(Alamanda, 2020; Aluthge et al., 2021; Muritala & Taiwo, 2011; Samuel & Oruta, 2021).
Joseph Schumpeter conducted the first systematic attempt by an economist to understand the process of invention in the early half of the twentieth century. He classified the process as follows: invention, innovation, and diffusion. According to Schumpeter, the invention is the first demonstration of an idea; innovation is the first commercial use of an invention in the market; and diffusion is the spread of the technique or process throughout the market. Adoption of an innovative process or technology typically begins slowly with a focus on market positioning, then gains momentum, achieving rapid diffusion, before slowing down as saturation is reached, with the focus shifting to incremental improvements and cost reductions (Knight, 1967). Disk drives, vehicles, sailing ships, semiconductors, steam engines, and many more technologies exhibit well-documented S-curves of technological growth (Schilling and Esmundo, 2009).
The "linear model of innovation," a more-or-less continuous flow through the three stages, from basic research to applied research to technology development and dissemination, is based on this three-stage journey of gradual start-up, growing traction, and eventually falling returns. Gains in scientific understanding, according to the concept, influence the rate and direction of innovation, and the easiest way to increase the output of new technologies is to simply put more money into R&D (Nemet, 2007). This is a technology-driven or supply-driven process. Schumpeter's early study on the drivers of innovation emphasized the role of the individual entrepreneur (Xu, 2007). Later research emphasized the importance of major corporations with the capacity to do substantial R&D and support innovative technologies. Schumpeter's concept of "creative destruction," which represents the replacement of old firms and old goods with inventive new firms and products, has had a profound impact on modern understandings of the innovation process. Detractors, on the other hand, argue that Schumpeter was more concerned with the effects of innovation than the causes and that none of his books "contain anything that can be recognized as an innovation theory" (Ruttan, 2001).
Fouquet (2010) investigates previous energy transitions by industry and service in order to identify features that may be significant for future changes. The ability to produce cheaper or better energy services has been identified as a fundamental economic motivator for energy transitions. In most cases, the existence of a specialized market ready to pay a premium for these characteristics allowed for the incremental development of new energy sources and technologies until they could compete with the incumbent energy source. Other characteristics shared by successful energy transitions, according to Fouquet (2010), are a successful "learning curve" that allows costs to fall, and an S-shaped growth model of technology diffusion into a new market or substitution in an existing one.

As evidenced by some studies, scholars have shown a significant level of interest in attempting to unravel the interaction between government spending and economic growth in recent times. (Zhou, Zeng, Jiang, and Xue, 2020)investigated the impact of high-quality economic growth and transmission mechanisms, as well as the economic effects of TIP. To analyze the study, a Bayesian technique was used. The study's findings indicate that if the government increased TIP, tax rates and growth rates would rise while the proportion of public spending would shrink. Furthermore, while steady-state output may be lower in the near run, it may achieve high-quality growth in the long run. The study advised that further research be conducted to improve technological innovation preferences on economic growth, as well as to affect technological innovation preferences on total social benefit.

Wu and Hu (2020) investigated the impact of external government subsidies, internal slack, and ownership concentration on green technology innovation, as well as the role of ownership concentration as a moderator in this process. The fixed effect model of negative binomial was used as an analytical tool in the investigation. The study found that a combination of government subsidies and unabsorbed slack successfully enhances businesses' green technical innovation, whereas a combination of government subsidies and absorbed slack had the reverse effect. Because government subsidies positively affect corporate green technology innovation, the study recommended that policymakers strengthen their support for enterprise subsidies for cleaner production within a certain threshold, as exceeding this threshold may harm other government-sponsored projects and squeeze enterprise green R&D investment.

Ibidunni, Kolawole, Olokundun, and Ogbari,(2020)investigated the relationship between informal economy SMEs engaging in international business interactions and knowledge transfer. The Structural Equation Model was used as an analytical approach in the study. According to the study's findings, information transmission components such as R&D and social networking have varying degrees of impact on the performance of informal sector SMEs in terms of innovation. Knowledge transfer during training has a negative and insignificant relationship with innovation performance. According to the report, SMEs in developing nations such as Nigeria should prioritize real-world involvement with their businesses and learning through practical contacts with international business associates over participating in formal training programs. Cin, Kim, & Vonortas,(2014)empirically investigates the effects of R&D promotion policies on SME success as assessed by value-added productivity. To examine the outcomes, the study used dynamic panel data. The study discovered considerable evidence of a favorable productivity effect of government R&D subsidies. The subsidy has successfully increased Korean manufacturing SMEs' R&D expenditure and value-added productivity. As a result, it promotes entrepreneurial activity and economic progress.

Khan, Ali, Kirikkaleli, and Wahab (2020) investigated the influence of public-private partnership investment in energy and technological innovation on consumption-based carbon emissions in China. In the investigation, the unit root test, the Maki cointegration test, totally modified ordinary least squares, dynamic ordinary least squares, canonical cointegration regression, and the frequency domain causality test were all utilized. They observed a link between public-private energy investment, technological innovation, renewable energy consumption, exports, imports, and consumption-based carbon emissions. The study recommends technological innovation for a cleaner manufacturing process, as well as public-private partnerships to invest in renewable energy.

Nuru and Gereziher (2021) investigated the effects of government expenditure innovations on the volatility of the South African exchange rate. Jordà's vector autoregressive impulse response model was used in this investigation. The study found that public expenditure innovation has a strong depreciating trend influence on exchange rate volatility, with the impact varying depending on the type of fiscal expenditure innovation. While the direction of the innovation has no effect on the influence of public expenditure innovation on exchange rate volatility, it does vary depending on the state of the economy. Ahuja and Pandit (2020) investigated the connection between government spending and economic growth. A panel data collection

from 59 nations was used in the study. The study discovered a one-way relationship between GDP growth and government spending, with government spending being the cause of GDP growth.The outcome also supported Keynesian theory. The study cautioned people against making broad generalizations based on the study's findings that go beyond the precise metrics used.

Asiagwu, Ugherughe, and Ezeabasili(2023)investigated how government spending affects economic growth. In the study, the Autoregressive Distributed Lag (ARDL) method was used. In Nigeria, studies showed no significant difference between governmental expenditure policies and economic growth. It was discovered that public recurrent spending had a negative influence on economic growth, but the positive effects of public capital expenditures over the research period had no appreciable impact on economic growth.The report recommends that the government stop leaks and waste in the nation's public finances to maintain the share of recurrent expenditure in overall expenditure within a sustainable range.

Olaoye, Eluwole, Ayesha, and Afolabi (2020) explored the asymmetry in the ECOWAS government spending-growth nexus.In the setting of panel data, the study applies the System Generalized Method of Moment. During the study period, the researchers observed evidence of asymmetry in the ECOWAS government spending-economic growth nexus. The findings show that the response of economic growth to shocks in government spending differs depending on the nature of the shocks. Increases in government spending have a statistically significant positive impact on economic growth. According to the report, governments in developing countries should examine the detrimental impact of expansionary government spending shocks on private consumption, particularly in ECOWAS, where capacity utilization and unemployment are significant challenges.

The review of existing literature revealed different trend and directions. Some studies such as Khan, Ali, Kirikkaleli, and Wahab, (2020); Cin, Kim, and Vonortas, (2014), and Wu and Hu, (2020) found a positive relationship between government expenditure and innovation, while studies such as Nuru and Gereziher (2021); and Zeng, Jiang, and Xue (2020) discovered a negative connections between government expenditure and innovation. The general observation is that the results has been mixed which might be as a result of different factors such as sample period, methodology used by the researchers, estimation techniques, variables used to proxy innovation, and countries under consideration (developed or developing countries). Although the result has been mixed, this study therefore identified that gap that all studies did not separate the government expenditure to ascertain if capital expenditure or recurrent expenditure that has a greater impact on innovation. By doing so, it will help the government and policy makers to ascertain where to focus more attention. It is against this background that this study used capital and recurrent expenditure to ascertain their impact on innovation in Nigeria.

Methodology

The study examines the impact of government spending on innovation in Nigeria from the second quarter of 2000 through the first quarter of 2021 using secondary time series data from the World Development Indicators (2018) and the Central Bank of Nigeria Statistical Bulletin (2021). Innovation was proxiedusing scientific and technical journal articles from 2000 to 2018. The study uses quarterly data. It will help make comparisons and evaluate trends in the model.

Model Specification

The cointegration test is used in this study to determine the long-term relationship between innovation which is the dependent variable and capital expenditure, recurrent expenditure, and inflation rate as the independent variables. After the cointegration test to ascertain the long-run relationship between the dependent and independent variables was established, the study also established the short-run error correction model. The study’s functional relationship between variables is expressed as follows:

INNOV= f (CAP, REC, INF) (1)

INNOV = $\beta_0 + \beta_1$CAP $+\beta_2$REC$+\beta_3 INF + \mu_t$ (2)

Where:

INNOV: Innovation (Proxied with Scientific and Technical Journal Articles)

CAP: Capital Expenditure (Government Expenditure)

REC: Recurrent Expenditure (Government Expenditure)

INF: Inflation Rate

β_0: Constant

β_1 to β_3: Parameters

μ_t:Error term

Log-linear equation 2 to give:

lninnov = $\beta_0 + \beta_1 In$cap $+\beta_2 In$rec$+\beta_3 inf + \mu_t$ (3)

After obtaining the long-run relationship, to estimate the short run relationship, the corresponding error correction equation is given as below: Note: inf: inflation rate was not log linearize since the data is already in rate:

$\Delta Ininnov_t = \beta_0 + \sum_{i=1}^{p} \beta_1 \Delta Incap_{t-i} + \sum_{i=t}^{p} \beta_2 \Delta Inrec_{t-i} + \sum_{t=1}^{p} \beta_3 \Delta inf_{t-i} + \psi ECM_{t-1} + \mu_t$(5)

The ECM_{t-i} is the error correction term. The coefficient of the ECM_{t-i} measures the speed of adjustment toward the long run equilibrium.

The variables in the model are lninnov = lncap + lnrec + INF

Where:

lninnov: log linear of Innovation (Proxy for Scientific and Technical Journal Articles)

lncap: log linear capital expenditure (Government Expenditure)

lnrec: log linear recurrent expenditure (Government Expenditure)

INF: Inflation rate

Note*: variables: innovation, capital and recurrent expenditure were all logged aside from inflation which is already at a rate. This brings the values to a comparable scale and "linearity" to the values.

Estimation Techniques

The study employs the Phillip-Perron (PP) unit root test to determine if the time series is stationary. Time series data typically follow a specific trend and economic theory requires such data to be subjected to stationarity test to avoid spurious results. This will also assist in determining which research technique to use. For the study, all variables were integrated at I (1) using the Phillip-Perron (PP) tests. This implies that at first difference, all variables were integrated. Based on the unit root test results, the cointegration test is used in this study to determine the long-run relationship between government expenditure and innovation in Nigeria. If there is evidence of cointegration in the model, the study will also conduct a valid error correction model between the model to ascertain the short-run relationship.

Results and Discussion

The results of this study are presented in the following order unit root test, co-integration test result, error correction test result. All variables innovation, capital and recurrent expenditure were all logged aside from inflation which is already in rate. This is to bring the values on to a comparable scale and brings in "linearity" to the values.

Unit Root Test

The orders of integration of the variables are examined using the Phillip-Perron (PP) test statistics. The result presented in Table 1 below shows that all variables achieved stationarity at level and first differencing at 5% critical value. Based on the result, the study will use cointegration test to analyze the objective of the study:

Table 1: Unit Root Test

Variables	PP	5% Critical Value (*)	Prob. *	Order of Integration
lninnov	-2.903566	-3.013885	0.0384	I (1)
lncap	-2.903566	-3.772605	0.0049	I (1)
lnrec	-2.903566	-3.715200	0.0058	I (1)
INF	-2.903566	-4.014218	0.0024	I (1)

Source: Author's Computation using E-View

Cointegration Test

Based on the unit root test, which revealed that all variables were stationary and integrated at level and order one, the linear combination of one or more of these variables could demonstrate a long-run connection. The multivariate co-integration methodology described by Johansen (1990) was used to capture the level of cointegration among the variables to fulfil the specified goal of determining the long-run link between government expenditure and innovation. The trace test and maximum eigenvalue from this technique were used to determine the number of co-integration vectors, and the findings are shown in Tables 2 and Table 3.

The trace test indicates two co-integrating variables while the maximum eigenvalue indicates one co-integrating variable at a 5% level of significance. The result, therefore, suggests that there exists a long-run relationship between government expenditure and innovation in Nigeria. Hence, there is a need to carry out error correction test (ECM). The usual method for modeling time series equations is an Error Correction Model (ECM). The ECM allows for handling non-stationary data series and separating handling of non-stationary data series and the separation of the long and short-term.

Table 2: Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.324742	60.68083	47.85613	0.0020
At most 1 *	0.297034	33.58722	29.79707	0.0175
At most 2	0.117542	9.268418	15.49471	0.3411
At most 3	0.009238	0.640357	3.841466	0.4236

Source: Author's Computation using E-View

Table 3: Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.324742	27.09361	27.58434	0.0577
At most 1 *	0.297034	24.31880	21.13162	0.0172
At most 2	0.117542	8.628060	14.26460	0.3184
At most 3	0.009238	0.640357	3.841466	0.4236

Source: Author's Computation using E-View

Error Correction Model Test

The result in the Table above shows that the coefficient of error correction mechanism (ECM) is negative -0.022692 and significant at 0.05 per cent critical level. This shows that 2.27 percent of disequilibria in Nigeria's innovation in the previous period error will be corrected for in the current period at a speed of adjustment of 2.27 percent. Alternatively put, in this study, the error correction coefficient is -0.022692. The coefficient reveals that the speed of adjustment between the short-run and long-run realities of the cointegrating equations is 2.27% within a quarter. The significance of the ECM is an indication and a confirmation of the existence of a long run equilibrium relationship between innovation in Nigeria and all the explanatory variables. This shows exactly what needs to be done to absolve the short-run dynamics of the relationship. Again, the significance of ECM (-1) holds that a negative and statistically significant error correction model coefficient is necessary for the variables to be co-integrated. This result is presented in Table 4.

Table 4:Error Correction Model Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.008837	0.001701	5.196786	0.0000
D(LNCAP)	0.049712	0.031912	1.557802	0.1241
D(LNREC)	0.064683	0.087348	0.740517	0.4616
D(INF)	-0.004042	0.000902	-4.479266	0.0000
ECM(-1)	-0.022692	0.046851	-0.484345	0.0297
R-squared	0.240500			
Prob (F-statistic)	0.001020			
F-statistic	5.224824			
Durbin-Watson stat	0.438139			

Source: Author's Computation using E-View

Conclusion and Recommendations

Innovation is anything new, unique or improved. One is considered innovative where such person enjoys experimenting and discovering new ways to accomplish things. Innovation is derived from the Latin Novus, which means "new," as are nova, novel, and novice. Something inventive renews or changes the way a thing has been done in the past. The broad objective of this study is to investigate the long run impact of government expenditure on innovation in Nigeria; specifically, to examine the long run effect of both capital and recurrent expenditure on innovation in Nigeria. The study employed the Johansen cointegration test and error correction model as analytical techniques for this study. The study discovered that there exists a long-

run relationship between government expenditure and innovation in Nigeria. The result of error correction model also indicates that 2.27 per cent of disequilibria in Nigeria's innovation in the previous quarter is corrected for in the current quarter.The coefficient reveals that the speed of adjustment between the short-run and long-run realities of the cointegrating equations is 2% within a quarter.

Based on the findings the study recommended that since there is a long-run relationship innovation and government expenditure, there is a need for government to increase both capital and recurrent expenditure to boost research and development in Nigeria which will have a transmission impact on the economy. The study also recommended the need to innovate both public-private partnership investment in Nigeria. This study contributed to knowledge by establishing a long run relationship between innovation and government expenditure in Nigeria using both capital and recurrent expenditure in Nigeria. The study also contributed to the body of literature for those who would carry out further research inthis area of study in future.

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