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CONTENTS

RESEARCH PAPERS

1. Olufemi A. Ogunkoya, Adeola E. Adetayo, Hassanat A. Hassan
   Sales Promotion Tools and Consumer Buying Behaviour
   in United Bank of Africa, Ogun State ................................................................. 123

2. Rasaki O. Kareem, Rukayat A. Arije, Yusuf H. Avovome

3. Mustapha Olanrewaju Aliyu, Ismaila Bolarinwa Kadiri,
   Emmanuel Olaniyi Dunmade, Nuha Salihu Aremu,
   Abiodun Peter Abogunrin
   Influence of Leader-Member Exchange
   on Organisational Citizenship Behaviour
   in Tuyil Pharmaceutical Industry, Nigeria .......................................................... 153

4. Emmanuel Oladapo George, Jimoh Sina Ogede
   Asymmetric Oil Price and Inflation: Evidence from
   Net Oil Exporting Countries in Africa ............................................................... 168

5. Albert Olusanmi Ilugbemi, Festus Olumide Fawehinmi
   Impacts of Oil Price Volatility and Monetary Policy
   on Economic Performance of Non-Oil Producing Countries in Africa .............. 180

6. Ik Muo, Moruff Sanjo Oladimeji, O. I. Okunbadejo
   Financial Bootstrapping and Small Business Growth
   in Lagos Metropolis, Nigeria ............................................................................ 198

7. Adedayo Emmanuel Longe, Tolulope Oluwatosin Bolaji,
   Caleb Olugbenga Soyemi, Emmanuel Olajide Adebayo
   Dynamic Links Between Financial Development
   and Carbon Emission in Nigeria ........................................................................ 214
SALES PROMOTION TOOLS AND CONSUMER BUYING BEHAVIOUR IN UNITED BANK OF AFRICA, OGUN STATE

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JEL M30, M31, M37

Abstract

This study aims to examine the effect of sales promotion tools on customers of United Banks of Africa (UBA) in Ogun state. A survey research design was adopted in this study. The targeted population consists of customers of UBA in Ogun State. A simple random sampling technique was used to select 395 respondents from the population. A self-structured questionnaire was employed in obtaining primary data for the course of the study. Findings revealed that individual sales promotion tools positively and significantly influence target market, customer patronage and customer satisfaction. Therefore, it is concluded that consumer buying behaviour (target market, patronage and satisfaction) can only be achieved through effective services rendered by UBA in Ogun State, Nigeria.

Key words:

Sales Promotion, Target Market, Patronage, Satisfaction, Consumer Behaviour.

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1. Introduction

Sales promotion could be seen as a viable outlet among the main specialized marketing networks, not only as a strategy, but also as a technical offensive to combat the constantly changing competitive business environment. Sales promotion is a means by which companies can retain their customers and an aid to profitability induced by the return purchase (Banabo & Koroye, 2011). According to Lindholm (2012), sales promotions have a long-term positive effect on sales, because promotions persuade consumers to change brands and buy more, while some research has reported opinions about contracting after a promotional purchase, the probability of repeating the purchase is reduced after a non-promotional purchase. Sales promotion can be an effective tool in a highly competitive environment when the aim is to convince retailers to carry a new product or influence customers to select it over those of competitors.

Most of the growing promotional activities are created in the heart of customers who need to meet the basic physiological demands for satisfaction. As a result, most customers choose banking institutions based on services provided and which meet their satisfaction. Hence, banks must develop a strategy to attract potential customers, guaranteeing clientelism and retaining their existing customers.

The consensus of researchers affirms that promotion leads to higher sales (Gartwright 2002), in Aworemi, Oyedokun, Ajagbe & Wojiade (2008); Kotler, 2009). However, its long-term effects are questionable and other researchers have a contradictory result. According to Ailawadi (2001), as cited in Lindholm (2008), the long-term effect of promotion on sales has a positive result and persuades customers to buy larger quantities of their products, which is why some researchers have a contradictory opinion on the results.

In addition, researchers placed great emphasis on the need for sales promotion by organizations in the transportation, manufacturing, communications, and production areas of the hub in the market and in promotion servers, (Ailawadi 2001; Lindholm, 2012; Mitta & Pachauri, 2013). However, there is a dearth of empirical studies on sale promotion in banking institutions. Therefore, this study aims to examine the effect of sales promotion tools on customer buying behaviour in the Nigerian banking sector.

1.1. Research Hypotheses

H01: Sales promotion tools have no significant influence on target market.

H02: Sales promotion tools have no significant influence on customer’s patronage.

H03: Sales promotion tools have no significant influence on customer’s satisfaction.
2. Review of Literature

2.1. Sales Promotion

The consensus of previous studies confirmed that sales promotion has short- and long-term effects. However, its long-term effects are questionable as various studies have reported conflicting results (Ailawadi 2001; Lindholm, 2012). Chaharsoughi and Yasory, (2012) define sales promotion as a set of marketing techniques designed within a strategic marketing framework that adds value to the product or service and offers superior-to-normal offers in order to reach specific sales and marketing objectives or goals. This additional value can be tactical in the short-term or part of a longer term franchise building strategy. After assessing the effect of sales promotion on customer attention to purchase, studies reported that the content of sales promotion attracts customer attention and at the same time creates awareness to increase favoritism. We can deduce that when the sales promotion is well planned and structured, it will result not only in short-term purchases but also in strengthening long-term patronage (Lindholm, 2008).

Similarly, Mitta and Pachauri (2013) point out that in today's competitive and volatile environment, all marketers, including banks, communicate with their target markets. It is clear that the design of sales promotion tools of banks must be from the point of view of the customers and the competitive advantage of its banks if the sales promotion tools are designed according to customer needs. The target market, according to Kotler and Armstrong (2004), has been described as a set of buyers who share the common needs or characteristics that the business decides to serve. Generally, the target market can refer to customers with similar needs which can be met by a particular product. Kotler and Keller, (2009) opined that the process of identifying target audience committees with a clear audience in mind: such as potential buyers, current users, decision makers or influencers; individuals, groups, or the general public are the most relevant to the objectives of a buying decision. It was pointed out that the target audience had a significant influence on the tools for promoting design sales.

One of the ways to identify a target market is to divide the market into segments according to the profile of the target market. This actually facilitates the ability of the business to design appropriate products and tools that satisfy the target customers, thereby encouraging them to stimulate customer favoritism. Based on the researchers’ experience of working in commercial banks as a marketing manager, the design of sales promotion tools during a promotional activity is best done from a market perspective target. These strategies enable the bank to increase its sales volume
during and after the promotion. Some of the tools include financial incentives, gifts, sweepstakes and sometimes hiring a professional promoter service to train and retrain staff on how to communicate effectively with clients.

2.2. Target Marketing and Targeting Barrier in the Financial Institution

Financial institutions must avoid the "massive marketing trap" and reap the benefits of thoughtful strategic targeting. Financial service providers, namely insurance companies, face great difficulties in trying to overcome the mass commercial approach or the diversified approach of the product. This may be due to the "fair" opinion of some bankers and insurers that all customers are of equal importance and should receive similar quality of service according to White, (1992).

Financial institutions that have this view and end up risking and rejecting segmentation believe that all customers can be satisfied with a set of products and a set of marketing programs. If fragmentation is not at all accepted in the context of equality, the objective of segmentation should be considered to help the financial institution by increasing its focus on clients and improving its understanding of client needs. Clients with this approach may not be excluded and client selection strategies will be rejected to serve all clients. While the equality approach may appear to offer some benefits, there is a risk of going too far in this view. Different product and customer service requirements may not be recognized. Management may not recognize the value of recognition and may not adequately fund the most attractive positions for the business. Serving a specific group of segments at the same time may not be manageable. Decisions whether or not to withdraw from unattractive and unprofitable activities can be ignored simply because of the mechanism for implementing decisions that do not exist in current organizational structures, White, (1992).

Too often financial institutions are not in the habit of associating customer status with determining profitability, such as the tendency to buy a particular product, the tendency to remain loyal to the institution for a certain time, behavior and the attitude of clients in their financial behavior. There may also be a mismatch between the selected segment and the strategic distribution of the service provider. Although financial institutions are increasingly recognizing the importance of a strong customer focus, radical changes in the organization chart are not necessarily easy to implement. For example, some financial institutions have moved to a matrix structure in which products and customers are more weighted, with product groups becoming champions of specific customer groups and their product responsibilities. Unfortunately, in some cases, staffing has become unclear as to job responsibilities and priorities. The danger
is that staff will view fragmentation as an additional burden and resist cultural change according to Ikpefan, (2013).

2.3. Sales Promotion, Customers Patronage and Customer Satisfaction

Promotion programs should be directed to the intermediary of end consumers using the mass media. The geographic dispersion and the number of potential buyers are the main reasons for a mass approach. Promotional sale is therefore necessary in a place of purchase, but industrial buyers' advertising is used more selectively due to industrial buyers who need special needs and technical questions, so that the seller can supply the information and support necessary for sales. As for the problem of the target audience, it is the composition of the Decision-Making Unit (DMU). This includes people in a household or people in a shopping center of an organization involved in making product purchasing decisions, which means that the more people there are in the DMU, the more purchase of product. The emphasis is on personal selling, otherwise sales promotion tools are necessary (Adeleye, 2006). Customer satisfaction could be seen as the number of customers or percentage of total customers whose reported experience with a firm, its products or its services (ratings) exceed specified satisfaction goals. When customers are dissatisfied, they are likely to break off the relationship with the bank unless they are restricted from doing so by other limitations such as long-term mortgages, complacency. If they are satisfied, the bank then has a chance of providing further services to the customer and of being recommended.

2.4. Sales Promotion and Consumer Buying Behaviour

Consumers are faced with various incentives to respond to in the market. Incentives include the forces of marketing 4Ps (place, price, promotion and product) in the environment. However, an organization should consider the consumer decision-making process that leads to the observation of the customer response in the form of brand choice, agent selection, product selection, time purchase and the amount spent on products, among others. Regarding the elements of the marketing mix, market behavior must be well integrated to structure the marketing mix in the best way for better placement in selected marketing segments. Consumer characteristics and their influences play a key role in the consumer's perception of actions and the decision-making process, which is why Hawkins, Best and Coney, (1989) stated that the marketing manager should consider the consumer as a solution to problems due to the fact that the consumer is a decision-making unit, transmits information, processes it in the light of the current situation, takes measures to obtain satisfaction which improves
life. It is obvious that consumer behavior is the epitome of marketing. It is observed that certain factors that influence consumer behavior, such as cultural, social, personal, psychological and casual factors, are all holistic approaches to the behavioral recognition market that make a complex creature, according to Pinki, (2014).

2.5. Theoretical Framework

2.5.1. The Hierarchy of Effects theory

According to Lavvid and Skinner cited in Osuagwu, (2002), the theory describes the effectiveness of a promotion to start a sequence of events that must be completed before the consumer can buy the product and ultimately achieve marketing goals. The theory has six steps:

**Awareness:** an individual is aware of the availability of products.

**Knowledge:** an individual knows the products offered. I really like it.

**Preferably:** an individual has a favorable attitude towards the product. The person's favorable attitude has become a preference.

**Conviction:** is the ability to convince a customer in buying a product or brands which need to be converted to action.

**Preference:** is combined with the desire to buy and the confidence that the purchase will be used.

**Shopping:** an attitude turns into real buying behavior.

The consumer must first know that the product exists. After that he or she should pay close attention to the product, and what it can provide in the next step is that the consumer should assess the merits of the product, hopefully the product will benefit them. Good practices can lead to continued use. It should be noted that the consumer must follow the previous steps before continuing with the product in-take. The key value of an effect hierarchy is its usefulness in determining the appropriate marketing communication strategy and assessing the communication effort. When a message is sent to a target audience, the sender probably assumes that the audience responds in a special way. A number of academics have grouped these responses into three main groups which are cognitive, affective and psychomotor. According to these scientists, all of the messages try to influence at least one of these responses. The hierarchy of results implies that the consumer must go through a certain number of stages, from ignorance to awareness, acquisition and brand loyalty.
2.6. Nexus relationship between sales promotion tools and customer buying behaviour in Nigeria

Amusat, Adejumo, and Ajiboye, (2013). Study the effect of sales promotion as an antecedent of sales volume: a study of selected manufacturing industry in Ibadan, South Western, Nigeria. A Structure questionnaire was used to collect data from the sample of eighty (80) respondents through a simple random sampling method. Regression analysis was used to analyze the data with the aid of Statistical Package for Social Science (SPSS) version 20. Results showed that sales promotion dimensions such as bonus, coupons, free samples, price promotion and premiums were joint predictors of sales volume. The paper concluded that management of the Nigerian manufacturing industry should increase budget on sales promotion dimensions and also set up more and effective sales promotion departments with experienced staff.

Chaharsoughi, and Yasory, (2012) examine the effect of sales promotion on consumer behavior based on culture. The study of culture is seen as profound implications on the psyche of the consumers’ behavior, adaptation to cultural values leads to marketing effectiveness. It was concluded that sales promotion acts as a moderator of the effect of culture on the consumer behavior and may affect consumer behavior independently of culture.

Chang, A. Ya-P. (2017) studies the effects of sales promotion on consumer involvement and purchase intention in Tourism Industry. Referencing at 2014 Kaohsiung International Travel Fair, 1000 copies of questionnaires are distributed to the customers, and 421 valid copies are retrieved, with the retrieval rate of 42%. The results revealed that there is a significant correlation between sales promotion, consumer involvement and purchase intention which indicates that consumers with high involvement appear to have more awareness and concerns about sales promotion of a tourism business than the ones with low involvement do.

Stephen, Aliyu, and Ibrahim (2017) investigate the impact of sales promotional strategies on organizational performance in Nigeria with reference to Flour Mills Maiduguri, Borno State Nigeria. The population for the study was cut across the entire management staff from top, middle to lower level; both primary and secondary source of data was employed in the study. The data collected were subjected to descriptive statistics such as percentage analysis in order to analyze the data; regression analyses were used for testing hypotheses. The result signifies that sales promotional strategies have positive and significant effects on organizational performance. Questionnaires were administered to twenty (20) staff using random sampling techniques.
3. Methodology

The study examines the effect of sales promotion tools on consumer buying behaviour with reference to UBA in Ogun State. The survey research design was adopted in this study. The targeted population of this study consists of 29,782 customers of UBA in Ogun State based on their financial statement as in 2018. The sample size for the study was determined using the Taro Yamane’s technique. The formula stated as:

\[ n = \frac{N}{1 + Ne^2} \]

Where: 
- \( n \) = desired sample size
- \( N \) = Population size under study
- \( E \) = Level of significance of error. Assumed to be 5%
- \( I \) = Constant

Therefore,

\[ n = \frac{29,782}{1 + 29,782 (0.05)^2} \]

\[ n = \frac{29,782}{75,455} \]

\[ n = 394.70 \] The sample size is therefore 395.

The primary sources of data were used for the study. This was done through the administration of a questionnaire. It was distributed at random to the customers of UBA, Ijebu Ode Branch; Ogun State. A Simple Random sampling technique was used to give the respondents equal chance of being selected for the study. Section A of the research focused on the socio-demographic aspect of the respondents. It consists of questions regarding age, sex, level of service, etc. while the Section B centers on sales promotion tools and target marketing, patronage, and satisfaction in the Nigerian banking industry. The section has 15 numbers of items in describing the effect of sales promotion tools on customer buying behaviour.

4. Result and Discussion of Findings

Hypothesis One

\( H_{01} \): Sales promotion tools have no significant influence on target market
The results reveal that there is a significant and positive relationship (R=.854) between sales promotion tools and target market. The R² value of 0.729 shows the coefficient of determination which shows that sales promotion tools independently accounts for 72.9% of the variation in target market.

**ANOVA**

<table>
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<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
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<tr>
<td>1</td>
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<td>Total</td>
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<td>337</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Author’s Computation, 2018.

The Anova tool (F=11.237, p=0.000) establishes that sales promotion tools are a significant and reliable model in explaining the target market. This reveals that sales promotion significantly influences target market. Therefore, the null hypothesis is rejected.

**Hypothesis Two**

**Ho₂:** Sales promotion tools have no significant influence on customer’s patronage

**Table 2**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.802a</td>
<td>.643</td>
<td>.629</td>
<td>.481</td>
</tr>
</tbody>
</table>

**Source:** Author’s Computation, 2018.
The result reveals that there is a significant and positive relationship (R=0.802) between sales promotion tools and customer’s patronage. The R² value of 0.643 shows the coefficient of determination which reveals that sales promotion tools independently account for 64.3% of the variation in customer’s patronage.

**ANOVA**

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<th>F</th>
<th>Sig.</th>
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<td></td>
</tr>
<tr>
<td>Total</td>
<td>20.238</td>
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<td></td>
</tr>
</tbody>
</table>

*Source: Author’s Computation, 2018.*

The Anova tool (F=3.408, p=0.003) establishes that sales promotion tools are a significant and reliable model in explaining customer’s patronage. This reveals that sales promotion significantly influences customer’s patronage. Therefore, the null hypothesis is rejected.

**Hypothesis Three**

H₃: Sales promotion tools have no significant influence on customer’s satisfaction

**Table 3**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.845*</td>
<td>.714</td>
<td>.701</td>
<td>.251</td>
</tr>
</tbody>
</table>

*Source: Author’s Computation, 2018.*

The result reveals that there is a significant and positive relationship (R=0.845) between sales promotion tools and customer’s satisfaction. The R² value of 0.701 shows the coefficient of determination which shows that sales promotion tools independently account for 70.1% of the variation in customer’s satisfaction.

ANOVA\textsuperscript{a}

<table>
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<tr>
<th>Model</th>
<th>Sum of Squares</th>
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<th>F</th>
<th>Sig.</th>
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</thead>
<tbody>
<tr>
<td>Regression</td>
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<td>.229</td>
<td>10.903</td>
<td>.003\textsuperscript{b}</td>
</tr>
<tr>
<td>Residual</td>
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<td>336</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4.533</td>
<td>337</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\textit{Source: Author’s Computation, 2018.}

The Anova tool (F=10.903, p=0.003) establishes that sales promotion tools are a significant and reliable model in explaining customer’s satisfaction. This reveals that sales promotion significantly influences customer’s satisfaction. Therefore, the null hypothesis is rejected.

4.1. Discussion of Findings

Findings are discussed in relation to hypotheses of the study. In it, it was ascertained that:

Hypothesis 1 was designed to examine whether sales promotion tools affect the target market. The study revealed that sales promotion tools influence the target market. They are numerous but individual banks should concentrate on the specific combination that seems to yield desire and most successful results. The development of sales promotion strategies requires that a firm must determine its best potential markets in order to select an appropriate tool with which to encourage potential customers to patronize them through their products (Ekankumo& Henry, 2011).

Hypothesis 2 was designed to determine if sales promotion tools influence customer’s patronage. Data gathered revealed that sales promotion tools influence customer’s patronage. These indicate that the number of potential buyers is the main reason for a mass approach. The customers influence their friends to such organization by patronizing them which assist in order to achieve adoption process. This finding is similar to the report of Ailawadi (2001) cited in Lindholm (2008), who found that sales promotions have a positive long term effect on sales because promotions persuade consumers to change brands and to buy in larger quantity, while some of the researches reported contrary views that after a promotional purchase, the probability of repeat purchase is reduced after a non-promotional purchase. It also agrees with the report of Akpan, (2009) cited in Olalekan, (2011) which contended that maximizing returns and optimizing profitability became the focus of banks and these can only be achieved through enhanced patronage; that is, increased customer
base with attendant satisfaction sufficient to consolidate loyalty through sales promotional activities. According to Ailawadi (2001) cited in Lindholm (2012), sales promotions have a positive long term effect on sales because promotions persuade consumers to change brands and buy in larger quantity, while some of the researches reported contrary views that after a promotional purchase, the probability of repeat purchase is reduced after a non-promotional purchase.

Hypothesis 3 was designed to determine if sales promotion tools influence customer’s satisfaction. The findings show that sales promotion tools influence customer’s satisfaction. The study revealed that a customer becomes the end user of the product and s the organization to outwit their competitors in the market. If customers are satisfied, the bank has a chance of providing further services to the customer and of being recommended which improves its performance. Akpan, (2009) cited in Olalekan (2011) contended that maximizing returns and optimizing profitability became the focus of banks and these can only be achieved through enhanced patronage; that is, increased customer base with attendant satisfaction sufficient to consolidate loyalty through sales promotional activities.

5. Conclusion

Sales promotion tools significantly influence the target market in UBA, Ogun State and it was suggested based on the result that the target market is seen as an engine that drives the organization to meet their potential customers to patronize their services which are highly valued by their customers, creating barrier against the competitor’s services.

Sales promotion tools also influence customer patronage in UBA, Ogun State which enhance customers to influence their friends to such organization and aids the increase in customer’s volume in order to achieve adoption process.

Sales promotion tools influence customer’s satisfaction in UBA, Ogun State which revealed that the customer becomes the end user of the product and helps the organization to outwit their competitors in the market. If customers are satisfied, the bank has a chance of providing further services to the customer in order to improve their performance.

5.1. Recommendations

Based on the findings, the following are hereby recommended;

a. Financial institutions personnel should create more friendly relationship with their customers.

b. UBA in Ogun State, Nigeria should provide further services that will bring about satisfaction to their customers.
References


VALUE ADDED TAX AND ECONOMIC GROWTH IN NIGERIA

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JEL C22, D21, H24, O47

Abstract

The study investigates Value Added Tax (VAT) and Economic Growth in Nigeria. The objectives of the study are to examine the impact of value added tax and economic growth and to determine the causal relationship between value added tax and economic growth in Nigeria. Secondary data sourced from Central Bank of Nigeria Statistical Bulletin was used for the study. The data properties were tested for unit root using Augmented Dickey-Fuller, Bound test co-integration was used to test for the long run relationship between the variables.

The result revealed that value-added tax positively and significantly impacted on economic growth of Nigeria both in the long-run and short-run. The causality test also indicated that there was a causal relationship between Value Added Tax and economic growth in Nigeria during the period under study. The study therefore recommended that government should increase the VAT rate and eliminate every VAT revenue leakage since it was found to have positive effect on economic growth in Nigeria.

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1. Background to the study

The need for tax payments has been a phenomenon of global significance as it affects every economy irrespective of national differences (Oboh & Isa, 2012). Tax revenue all over the world plays a vital role in the development of an economy; this facilitated many nations to introduce value added tax on goods and services. Tax imposition and its collection mostly depend upon a country’s economic structure, its developmental phase, growth of its service sector, extent to which the country has been industrialized, and its employment level.

Taxes therefore affect the expenditure size of government, the productivity and level of activities of businesses, the consumption pattern of individuals, the propensity to save and invest as well as the growth path of the economy. The economic growth of any nation depends on the amount of resources generated and under its control to finance its infrastructural need and meet its day-to-day expenditure. The resources needed are believed to be generated from external and internal - through a structured tax system. One of the precedencies for the introduction of Value Added Tax (VAT) in Nigeria was based on the fact that taxation as an instrument of fiscal policy is vital in generating revenue to finance the activities of government, redistribute income, stabilize the economy as well as stimulate growth and development.

VAT is a tax on estimated market value added to a product or service at each stage of its manufacture or distribution and the additions are ultimately added to the final consumer. End users of products and services bear the tax burden or the incidence because they cannot recover the tax paid on the consumption of goods and services. On the other hand, businesses can recover VAT they pay on goods and services because those goods and services are like intermediate goods and services. They use them to produce further goods and services that will be sold to other businesses in the supply chain or directly to final consumers. Value added tax is levied at each stage on value added in the economic chain of supply and it is a constant rate. In Nigeria, the VAT rate was 5% and an attempt to raise it to 10% met stiff resistance from the Nigerian Labour Congress (NLC). However, on Thursday, November, 21, 2019, The finance bill 2019 was passed by the Senate after scaling through the third reading on the floor of the Senate and signed into Law by the President of the Federal Republic of Nigeria which hitherto, raising the revenue for government, by various fiscal measures, including increase in the rate of value added tax from 5% to 7.5% and became effective in February, 2020.
Value added tax is a consumption tax, levied at each stage of the consumption chain and borne by the final consumer of the product or service. The administration of VAT is relatively easy, unselective and difficult to evade. Kamruddin-Parvez (2012), on the other hand, said “Value Added Tax (VAT) is a type of consumption tax that is placed on a product whenever value is added at a stage of production and at final sale”. It is a multi-stage tax imposed on the value added to goods and services as they proceed through various stages of production and distribution and to services as they are rendered, which is eventually borne by the final consumer but collected at each stage of the production or distribution chain. Similarly, Sanni (2012) said VAT is imposed on the supply of all goods and services other than those goods and services listed in the First Schedule to the VAT Act.

From the foregoing, VAT can be defined as a form of indirect tax that is charged and collected on the value added at each stage of the production and distribution process which is borne by the final consumer through the price he pays for the product.

Countries all over the world look for ways to boost their revenue, this facilitated many nations to introduce value added tax on goods and services. For instance, in Africa VAT has been introduced in Benin Republic, Cote d’Ivoire, Guinea, Kenya, Madagascar, Mauritius, Senegal, Togo and Nigeria in particular. Evidence suggests that in these countries VAT has become an important contributor to government revenue (Ajakaiye, 2000; Adereti, Adesina and Sanni, 2012).

Nigeria introduced VAT in 1993; however, its full implementation began on 1st January, 1994. This has attracted the attention of researchers and academia on its benefit to the economic growth of Nigeria. Economic growth measures the increase in the national income or total volume of production of goods and services of a country accompanied by improvements in the total standard of living of the people. Therefore, Economic growth is an increase in the capacity of an economy to produce goods and services, compared from one period of time to another.

Statement of the problem

Despite various governments’ efforts at enacting laws on VAT, Nigeria's economy is yet to feel the impact, enormous revenue that flows into the government treasury. Meanwhile, there are critics who argued that incidence of consumption tax (VAT) like other taxes are regressive.

A cursory look at previous studies conducted on the effects of value added tax on economic growth revealed that there are mixed findings from researchers. For instance, authors like Manukaji and Nwadialor (2016) adopted the OLS method used for the
study, Afolayan and Okoli (2015) employed the ECM and Granger causality test, Ofishe (2015) used OLS technique and found out that VAT had positive and significant effect on economic growth in Nigeria, while Yelwa and Awe (2016) used OLS and Granger causality technique, Denies (2010) discovered that VAT does not have any impact on the economic growth of Nigeria. However, in view of the research problem, the research questions are: What is the impact of consumption tax on economic growth in Nigeria? and What is the causal relationship between consumption tax and economic growth in Nigeria? The general objective of the study therefore is to examine the relationship between consumption tax and economic growth in Nigeria between 1994 and 2017. The specific objectives are to examine the impact of consumption tax and economy growth in Nigeria over the period as well as determine the causal relationship between consumption tax and economic growth in Nigeria.

To achieve the objectives of this study, the following hypotheses were formulated:

H01: There is no significant relationship between consumption tax (VAT) and economic growth in Nigeria over the period.

H02: There is no causal relationship between consumption tax (VAT) and economic growth in Nigeria over the period.

This study covered consumption tax and economic growth proxied by Gross Domestic Product (GDP) for the years 1994 to 2017. The years 1994 to 2017 are relevant to the study because they covered the years of the VAT experience in the country from its inception to 2017. This, it is hoped, will give a picture of the manner in which VAT has contributed to economic development in Nigeria.

The significance of the study hinges on the fact that extensive studies have been done on various aspects of the operations of consumption tax (VAT) in Nigeria, but not much had been done in study of VAT contribution to GDP, particularly up to 2017. This study is therefore imperative to adding to whatever studies already existed in the past on VAT. It will also help to increase awareness of what the government can do to improve the effectiveness of VAT in Nigeria. Furthermore, this study will serve as a bundle of literature to other researchers and students and policy makers in the area of value added tax.

2. Literature review

Development of VAT in Nigeria

The history of VAT in Nigeria dates back to 1991 when the Federal Government felt there was a need to review the entire system of taxes in the country with a view to
expanding the financial base for revenue generation (FIRS, 1999; Abdul-Rahman, Joshua & Ayorinde, 2013). Abdul-Rahman, et al. (2013) further argued that this became necessary because sales tax could not guarantee wider and better tax administration, as many states were resentful of its uniform nature due to differences in their political orientation. Sanni (2012), in his own contribution, said “before the advent of VAT, sales tax was under the jurisdiction of the States and generally poorly administered with marginal contribution in terms of revenue”. The rationale behind the adoption of VAT in Nigeria can be summarized as the need to achieve:

i. Simplification of indirect tax system

ii. Enhancement of tax neutrality in international trade

iii. Reduction in tax evasion, and

iv. Expansion of tax base promotion and investment.

A committee was set up and charged with the responsibility of carrying out the review (Soyode & Kajola, 2006; Gyang, 2012; Unegbu & Irefin, 2011). The committee completed its work on November 15, 1991 and made the following recommendations, among others:

i. The Government should introduce Modified Value Added Tax (MVAT) in Nigeria;

ii. The Government should allow a lead time period of two years between 1991, when the study group submitted its report, and the time the MVAT will be implemented in Nigeria to allow for adequate preparation for the scheme;

iii. MVAT, when introduced, should:

   a. Replace sales tax in its entirety
   b. Have a single rate
   c. Cover manufacturer’s and importer’s level in goods
   d. Cover professional services excluding medical and pharmaceutical services,
   and

   e. Pay special attention to State-Federal fiscal relationship.

The Federal Government, therefore, decided to abolish the sales tax and introduced the VAT system by virtue of Decree No. 102 of 1993, which took effect from January 1, 1994 (Okoye and Ezugwu, 2012).

**VAT as a replacement of sales tax**

VAT is a replacement of the then existing Sates Tax which operated under the Federal Government legislated Decree No. 7 of 1993, but was operated on the basis of residence.
The rationale behind replacing Sales Tax with the Value Added Tax was formed by a number of factors and considerations, notably:

(i) The base of the States’ Tax in Nigeria was narrow. It covered only nine categories of goods plus sales and services in registered hotels, motels, and similar establishments. The narrow base of the tax negated the fundamental principle of consumption tax which by nature is expected to cut across all consumable goods and services. VAT base is broader and includes most professional services and banking transactions which are high profit-generating sectors.

(ii) Only locally manufactured goods were targeted by the Sales Tax Decree, although this might not have been the intention of the then effective law. VAT is neutral in this regard. Under VAT, a considerable part of the tax to be realized is from imported goods. This means that under the new VAT, locally manufactured goods will not be placed at a disadvantage relative to imports.

(iii) Since VAT is based on the general consumption behaviour of the people, the expected high yield from it will boost the fortunes of the state governments with minimum resistance from the payers of the tax.

The nature of the VAT

Value Added Tax is a consumption tax that has been embraced by many countries worldwide. Because it is a consumption tax, it is relatively easy to administer and difficult to evade. The yield from VAT is a fairly accurate measurement of the growth of an economy since purchasing power (which determines yield) increases with economic growth.

VAT is a self-assessment tax that is paid when returns are being rendered. In-built is the refund or credit mechanism which eliminates the cascading effect that was a feature of the retail sales tax. The input-output tax mechanism in VAT also makes it self-policing because of the need to obtain receipts at each stage of the transaction. Although VAT is a multiple stage tax, it has a single effect and does not add more than the specified rate to the consumer price no matter the number of stages at which the tax is paid.

2019 Finance bill on VAT

The Bill amends section 2, 4, 10, 15, 46 and the First Schedule of the VAT Act and proposes the following:

• Services will be deemed to have been provided in Nigeria and therefore subject of VAT where the recipient is in Nigeria, regardless of whether the services were rendered within or outside Nigeria. However, where the recipient of a service is
outside Nigeria, such service shall be deemed “exported service” and hence not chargeable to VAT.

- On the other hand, the Bill further clarifies that services rendered to the fixed basis or permanent establishments of non-resident persons do not qualify as exported service and are therefore subject to VAT.

The proposed definition of “exported service” in the Bill suggests that the service provided must flow directly from the Nigerian resident to the person resident outside Nigeria. This means that exported service as contemplated by the Bill, does not include a transaction where the service in question flows from a Nigerian resident to another Nigerian resident to another Nigerian resident third party on behalf of or for the benefit of non-resident persons in Nigeria. This also includes the following:

- Exemption of companies with annual turnover of less than Twenty-Five Million Naira (N25,000,000.00) from the requirement of filing VAT returns;
- Removal of the requirement for foreign entities carrying on business in Nigeria to register for VAT in Nigeria and include VAT charges in their invoices;
- Specific description of what constitutes basic food items, within the meaning of the VAT Act, for VAT exemption purposes;
- The definition of goods and services has been expanded to cover intangible items that a person has ownership interest in, or derives benefit from, and which can be transferred to another person, other than land;
- Exemption of locally manufactured sanitary pads, tampons, and towels from VAT; and
- Exemption of nursery, primary, secondary, and tertiary education tuition levies from VAT.

**Empirical review**

Several empirical studies have been conducted on the impact of taxes on economic growth. Okafor (2012) investigated the impact of income tax revenue on the economic growth of Nigeria as proxied by the gross domestic product (GDP). The study adopted the ordinary least square (OLS) regression analysis technique to explore the relationship between the GDP (the dependent variable) and a set of federal government income tax revenue over the period (1981-2007). The regression results indicated a very positive and significant relationship between the components of tax revenue and the growth of Nigeria's economy.

Adereti, et al. (2011) studied value added tax and economic growth in Nigeria. Time series data on the Gross Domestic Product (GDP), VAT Revenue, Total Tax Revenue and Total (Federal Government) Revenue from 1994 to 2008, sourced from
Central Bank of Nigeria (CBN) were analyzed using both simple regression analysis and descriptive statistical method. Findings showed that the ratio of VAT Revenue to GDP averaged 1.3% compared to 4.5% in Indonesia, though VAT Revenue accounts for as much as 95% significant variations in GDP in Nigeria. A positive and significant correlation exists between VAT Revenue and GDP. Both economic variables fluctuated greatly over the period, though VAT Revenue was more stable. No causality exists between the GDP and VAT Revenue, but a lag period of two years exists.

Akwe (2014) analyzed the impact of Non-oil Tax Revenue on Economic Growth from 1993 to 2012 in Nigeria. These data were analyzed using the Ordinary Least Squares Regression. The result from the test revealed that there was a positive impact of Non-oil Tax Revenue on economic Growth in Nigeria.

Onaolapo, et al. (2013) examined the impact of value added tax on revenue generation in Nigeria. The secondary source of data was sought from Central Bank of Nigeria Statistical Bulletin (2010), Federal Inland Revenue Service Annual Reports and Chartered Institute of Taxation of Nigeria Journal. Data analysis was performed with the use of stepwise regression analysis. Findings showed that Value Added Tax has statistically significant effect on revenue generation in Nigeria.

Ogbonna and Ebimobowei (2012) investigated the impact of petroleum profit tax on the economic growth of Nigeria. To achieve the objective of the paper, relevant secondary data were collected from the Central Bank of Nigeria (CBN) and the Federal Inland Revenue Service (FIRS) from 1970 to 2010. The secondary data collected from the relevant government agencies in Nigeria were analyzed with relevant econometric tests of Breusch-Godfrey Serial Correlation LM, White Heteroskedasticity, Ramsey RESET, Jarque Bera, Johansen Co-integration and Granger Causality. The results show that there exists a long run equilibrium relationship between economic growth and petroleum profit tax. It was also found that petroleum profit tax does Granger cause gross domestic product of Nigeria.

Smith, et al. (2011) analyzed the contribution and performance of VAT in Bangladesh compared to other developing countries. The results showed that the performance of VAT was quite satisfactory in the initial years; afterwards, VAT collection remained stagnant at a certain level. The study found out that the stagnation happened as a result of: relatively small number of VAT tax-payers, general lack of awareness, and a weak monitoring system.

Manukaji and Nwadialor (2016) investigated the impact of VAT on economic growth in Nigeria (2005 to 2014). The study used data from CBN statistical bulletin. OLS method was used in the study. The outcome showed that VAT positively
contributed to the overall government revenue leading to increase in economic growth of Nigeria.

Aperè and Durojaiye (2016) in their study empirically analyzed the association between VAT, total government revenue and GDP from 1994 and 2014. Using simple regression, the result showed a meaningful positive association between VAT, total government revenue and GDP over the period under review.

Afolayan and Okoli (2015) in their empirical study carried out an analysis of how VAT has impacted on Nigeria’s economic growth from 1994 to 2012 by employing the ECM and Granger causality test. The results revealed an insignificant positive relationship between VAT revenue and RGDP. Granger Causality test established that the association connecting VAT and real GDP was unidirectional.

Oﬁshe (2015) in his study used OLS technique to empirically analyse the impact of VAT on economic growth in Nigeria (1994 to 2012). The result demonstrated that VAT meaningfully impacted on economic growth and total tax revenue in Nigeria.

3. Research methodology

Source of Data

For the purpose of this study, secondary data were utilized which were collected from various publications of the Central Bank of Nigeria (CBN) Statistical Bulletins and annual reports. The data were collected on Value Added Tax (VAT) and Real Gross Domestic Product (GDP) of Nigeria over the period 1994 to 2017 since VAT was introduced in Nigeria in 1994.

Method of data analysis

For the purpose of this study, data analysis was carried out using the Autoregressive Distributive Lag (ARDL) computed using the E-Views Econometric Software. Before carrying out the ARDL analysis, the unit root test properties of the variables were ascertained (Dang, 2013). The Augmented Dickey-Fuller (ADF) Unit Root Tests (Gujarati & Porter, 2009) was conducted to ascertain the stationarity of the data before performing the test.

After the ADF test showed that the variables are stationary at different stages, the bounds test approach to cointegration was conducted, to ascertain if the variables have a long-run relationship. In order to test the fitness of the model to the data, the following residual tests were conducted which included the Breusch-Godfrey Serial Correlation Test, Jacque-Bera Normality Test and Breusch-Pagan-Godfrey Heteroskedasticity test.
Model specification

In order to analyze the effect of consumption tax (VAT) on economic growth (proxied by RGDP) in Nigeria the equation 3.1 is expressed in an implicit form;

\[ RGDP = f(VAT) \]  \hspace{1cm} 3.1

Equation 3.2 expressed in an explicit form became:

\[ RGDP_t = \beta_0 + \beta_1 VAT_t + e_t \]  \hspace{1cm} 3.2

Equation 3.3 expressed in log form became;

\[ \log RGDP_t = \beta_0 + \beta_1 \log VAT_t + e_t \]  \hspace{1cm} 3.3

Where:

\[ \beta_0 \] in the regression stand for the intercepts of relationship in the models

\[ \beta_1 \] stands for the regression coefficients for the model.

\[ e \] = for the error terms

\[ t = i \text{th of the observation of the time series data (1994-2017)} \]

Log is the natural logarithm.

RGDP is used as the dependent variable (₦’ billion).

VAT is the independent variable (₦’ billion).

APriori expectation

The coefficient of consumption tax (VAT) is expected to be positive i.e. \( \beta_1 > 0 \). This implied VAT was expected to have a positive effect on RGDP.

In order to achieve the objective of determining the causality between VAT and Economic Growth, the causality model is as stated below:

In Granger’s test, Granger causality relationship is expressed in two pairs of regression equations by simply twisting independent and dependent variables. Therefore, the equation becomes:

\[ RGDP_t = \phi + \sum \phi_i RGDP_{t-1} + \sum \phi_2 VAT_{t-1} + e_{it} \]  \hspace{1cm} 3.4

\[ VAT_t = \beta_2 + \sum \beta_i VAT_{t-1} + \sum \beta_2 RGDP_{t-1} + e_{2t} \]  \hspace{1cm} 3.5

\( \phi \) is the coefficients to be determined.

\( \beta \) = as defined earlier

\( \sum \) represent summation.
4. Results and outcomes

Unit root test

This test was based on two forms which were at level and first difference respectively and it was carried out using Augmented Dickey-Fuller (ADF) test. Result (Table 1) of the ADF test conducted on the variables revealed that LOGRGDP was not stationary at level but became stationary at first difference which also mean that it was integrated of order one I (1). On the other hand, LOGVAT became stationary at level which implied that the variable was integrated of order zero I (0).

Table 1

Augmented Dickey-Fuller (ADF) Unit Root Test

<table>
<thead>
<tr>
<th>Variable</th>
<th>Augmented Dickey-Fuller (ADF) Unit Root Test</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level (intercept and trend)</td>
<td>1st difference (intercept and trend)</td>
</tr>
<tr>
<td></td>
<td>T-Statistic</td>
<td>Probability value</td>
</tr>
<tr>
<td>LOGRGDP</td>
<td>-2.421</td>
<td>.363</td>
</tr>
<tr>
<td>LOGVAT</td>
<td>-3.932</td>
<td>.000</td>
</tr>
</tbody>
</table>

Source: Authors’ Computation (2019).

Lag Length Determination

Result (Table 2) revealed that one lag was the optimum lag length based on the three criteria.

Table 2

Optimum Lag Length Selection

<table>
<thead>
<tr>
<th>Lag</th>
<th>AIC</th>
<th>HQIC</th>
<th>SIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-0.011</td>
<td>.008</td>
<td>.088</td>
</tr>
<tr>
<td>1</td>
<td>-7.376*</td>
<td>-7.318*</td>
<td>-7.077*</td>
</tr>
<tr>
<td>2</td>
<td>-7.187</td>
<td>-7.090</td>
<td>-6.690</td>
</tr>
<tr>
<td>3</td>
<td>-6.959</td>
<td>-6.823</td>
<td>-6.262</td>
</tr>
<tr>
<td>4</td>
<td>-6.917</td>
<td>-6.742</td>
<td>-6.021</td>
</tr>
</tbody>
</table>

*indicated optimum lag length
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion
Source: Authors’ Computation (2019).
Bounds Test

Since the variables were mixture of I (0) and I (1), the bounds test approach to cointegration as suggested by Pesaran, Smith and Shin (2001) was applied. The result of the bounds test (Table 3) showed that the value of $F$-statistic lies above the 95% upper bound value (6.617) of Pesaran test statistic, an indication that the null hypothesis, that there was no long-run association among the variables was rejected. This guaranteed the conduct of error correction needed for the estimation of long-run dynamics.

Table 3

<table>
<thead>
<tr>
<th>Model</th>
<th>ARDL</th>
<th>F-stat.</th>
<th>Diagnostic Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOGRGDP = f(LOGVAT)</td>
<td>ADL (1,0)</td>
<td>8.358</td>
<td>Chi-square (2) (Normality) Chi-square (1) (Heteroscedasticity) Chi-square (1) (Autocorrelation)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>.800 [.670] 1.057 [.304] 1.254 [.263]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lower bounds I(0) Upper bounds I(1)</td>
</tr>
<tr>
<td>5%</td>
<td></td>
<td></td>
<td>5.693 6.617</td>
</tr>
<tr>
<td>10%</td>
<td></td>
<td></td>
<td>4.461 5.254</td>
</tr>
</tbody>
</table>

Source: Author’s Computation (2019).

Long-Run Estimate

The result (Table 4) of long-run estimation showed that LOGVAT was statistically significant (conformed to a priori expectation). From the estimated coefficient of .352, it implied that a-one-per cent increase in value-added tax would result in approximately 35% increase in real gross domestic product in Nigeria. This is an indication that an increase in value-added tax would also contribute to economic growth in Nigeria in the long-run.

Table 4

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>T-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOGVAT</td>
<td>.352</td>
<td>.012</td>
<td>29.076</td>
<td>.000</td>
</tr>
<tr>
<td>C</td>
<td>8.817</td>
<td>.071</td>
<td>124.939</td>
<td>.000</td>
</tr>
</tbody>
</table>

Source: Authors’ Computation (2019).
Short-Run Estimate

The result (Table 5) of short-run dynamics depicted that the coefficient of \( \text{LOGVAT} \) was 0.107 with probability value of 0.000 (conformed to a priori expectation). This result implied that a one per cent increase in value-added tax would result in 11% increase in gross domestic product in Nigeria in the short-run. This result was an indication that an increase in value-added tax would result in an increase in real gross domestic product in the short-run.

The ECM was negative and highly significant, which further lent credence to co-integration between the variables under investigation. The feedback coefficient was -0.304 which suggested that about 30% disequilibrium was corrected in the current year. Hence, when real gross domestic was above or below its equilibrium level, it adjusted by approximately 30% within the first year to ensure full convergence to its equilibrium level.

\[
\text{Table 5}
\]

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>T-Statistic</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>DLOGVAT</td>
<td>0.107</td>
<td>0.018</td>
<td>5.949</td>
<td>0.000</td>
</tr>
<tr>
<td>ECM (-1)</td>
<td>-0.304</td>
<td>0.051</td>
<td>-5.995</td>
<td>0.000</td>
</tr>
<tr>
<td>R – Squared</td>
<td>0.643</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F – Statistic</td>
<td>18.047</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Durbin – Watson Statistic</td>
<td>1.442</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Authors’ Computation (2019).

Granger Causality Test

Results (Table 6) of causality test revealed that bidirectional causality existed between value-added tax and economic growth in Nigeria during the period under study. Based on this finding, null hypothesis two was rejected and the study concluded that there existed a causal relationship between value-added tax and economic growth in Nigeria at 5% critical level.
Table 6

Granger Causality Result (Lag 1)

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>Obs. 23</th>
<th>F-Statistic</th>
<th>Probability</th>
<th>Decision</th>
<th>Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOGVAT does not Granger Cause</td>
<td>16.259</td>
<td>.000</td>
<td>Rejected</td>
<td>Causality</td>
<td></td>
</tr>
<tr>
<td>LOGRGDP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOGRGDP does not Granger Cause</td>
<td>10.292</td>
<td>.004</td>
<td>Rejected</td>
<td>Causality</td>
<td></td>
</tr>
<tr>
<td>LOGVAT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Authors’ Computation (2019).

Discussion of Findings

The study focused on the relationship between value-added tax and economic growth in Nigeria between the period of 1994 and 2017. From the result, LOGVAT had positive and significant effect on LOGRGDP in the long-run while it had a positive and significant effect on LOGRGDP in the short-run. This finding implied that value-added tax had contributed immensely to economic growth in Nigeria. The finding was in line with the finding of Adereti, Sanni and Adesina (2011), Umeora (2013) and Onwuchekwa and Aruwa (2014) who found that value added tax contributed significantly to economic growth in Nigeria while the finding was not in conformity with the findings of Izedonmni and Okunbor (2014) who found in their study that value-added tax does not impact on economic growth in Nigeria.

5. Conclusion

The study sought to examine the effect of value-added tax on economic growth in Nigeria for the period of 1994 to 2017. Results revealed that value-added tax had a positive and significant effect on economic growth in Nigeria both in the long-run and short-run respectively. In addition, the Granger causality test indicated that there was a causal relationship between value-added tax and economic growth in Nigeria during the period under study.
Based on the findings, the study therefore recommended that the government should increase the VAT rate since it was found to have positive effect on economic growth in Nigeria. The VAT act should also be reviewed to enlarge its scope of coverage, as a means of increasing revenue generation, It should also be done in such a way that it will strengthen the collection machinery, remove loopholes and make room for a more efficient VAT system and the government should ensure that revenue collected through consumption tax (VAT) is effectively utilized for infrastructural developments that are visible for tax payers to see and appreciate.

References


INFLUENCE OF LEADER-MEMBER EXCHANGE ON ORGANISATIONAL CITIZENSHIP BEHAVIOUR IN TUYIL PHARMACEUTICAL INDUSTRY, NIGERIA

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JEL M12, M54, L23

Abstract

The study explores the influence of the leader-member exchange in the workplace on the employee’s willingness to exhibit organisational citizenship behaviour. The study’s population comprised 364 staff of Tuyil Pharmaceutical Industry, Kwara, Nigeria. Taro Yamane was used to determine a scientific sample size of 191 respondents. The findings show the significant association between the high-quality leader-member exchange and altruism, civic virtue, which implies that the employees have faith in one another and are willing to help coworkers in case of work-related issues because of a good quality relationship. The weak relationship exists between leader-member and it affects employees’ tolerance for the inevitable inconveniences associated with the work without complaining in conscientiousness, courtesy and sportsmanship variables. Supervisors and subordinates should be educated on the need and benefit of establishing and maintaining high-quality LMX.

Key words:
Leader-member exchange (LMX), organizational citizenship behaviour (OCB), discretionary behaviour, extra-role behaviour.

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1. Introduction

The concept of leadership has been widely conceptualised by social and management scientists specifically in the fields of industrial psychology, business management, human resource management, sociology, philosophy, among others. Virtually, every profit or non-profit organisation, government and politics used it consistently. Early researches on leadership viewed it in terms of innate individual traits, for instance, some people are naturally born with an inborn quality to lead, but later research shifted the emphasis on two (2) behavioural functions of leaders (i) initiating structure (task direction) and (ii) consideration (employees-centred). Subsequently, different leadership theories/traits were introduced by various scholars such as Fieldler (1967). Still, these new leadership theories have not been completely satisfactory, and for the past two decades have produced several theories, one of the most recent is the leader。

Several studies have examined leader-member exchange (LMX), and several outcomes have been reported, including performance ratings (Abbas, et al, 2012; Ansari, Lee & Aafaqi, 2007), actual performance (Chen, Lam, & Zhong, 2007), overall job satisfaction (Chen, et al, 2007; Diesesch & Liden 1986), satisfaction with supervisor (Dulebohn, Bommer, Liden, Brouer & Liden 2012), turnover (Wang, Xiaoping & Ni, 2010), role conflict and role clarity but did not include organisational citizenship behaviour criteria. LMX has attracted growing attention in different sectors. Inconsistencies in the previous studies have motivated this study. Also, the poor quality of LMX relationship exemplified by a lack of commitment, coordination, communication, accountability as well as lack of trust and respect for leaders are classified as one of the top reasons that members leave jobs in the pharmaceutical industry. Besides, the inability of an organisation to have workforce who engage in behaviour beyond the prescribed roles may result from a poor relationship between leaders and followers. In this relationship, members do his/her job and possibly the leader may provide carrot and stick (i.e. reward and punishment), and this relationship may not involve the high level of loyalty towards each other.

In other to ensure high-quality LMX in industries where product and service quality is crucial to business performance, managers need to build up good quality work relationships with their subordinates who deliver customer service to reduce absenteeism, turnover and low productivity. As a result, this study tends to look at the effect of leader-member exchange on organisational citizenship behaviour using Tuyil Pharmaceutical Industry as a study. This study examines the relationships between a leader, follower and extra-role behaviour to provide understanding on how high-
quality relationships are developed with staff members that are productive and motivate staff to extend their efforts beyond normal expectations. The following research hypotheses were formulated in nullity:

- **Ho1:** There is no significant relationship between high-quality LMX and Altruism in Tuyil Pharmaceutical Industry
- **Ho2:** There is no significant relationship between high-quality LMX and Civic Virtue in Tuyil Pharmaceutical Industry

### 2. Literature Review

Leader-member exchange (LMX) theory is a relationship-based, dyadic theory of leadership. Unlike theories of leadership behavior, which focuses on what leaders do such as transformational, autocratic, authentic, servant among others. But LMX theory breaks steadfastly on the assumption that leaders may influence employees in their group (referred to as members) through the quality of the relationship developed within them. One of the early findings of the LMX theory is that leaders develop relationships of varying quality with their subordinates and such differentiation characterises a wide majority of the workgroup studied (Liden & Graen, 1980; Graen & Schiemann, 1978; Graen & Uhl-Bien 1995). LMX is (a) a system of components and their relationships (b) involving both members of a dyad (c) involving interdependent patterns of behaviour and (d) sharing mutual outcome instrumentalities and (e) producing conceptions of environments, cause maps, and value (Scandura, Graen, & Novak, 1986; Harter & Ewanecy, 2002). Graen and Uhl-Bien (1995), the development of LMX theory has four stages; (Stage 1) is the investigation of characteristics of LMX relationships and their organisation's implications (e.g., outcomes of LMX) (Stage 2); is the description of dyadic partnership building (Stage 3); and is the aggregation of differentiated dyadic relationships to the group and network levels (Stage 4), respectively.

The model of LMX in terms of the subordinate roles and the quality of the LMX is separated into two basic groups: the in-group and the out-group. The in-group is defined by high trust, interaction, support, formal/informal rewards, employees’ attitudes toward the job, the amount of time and energy invested in the job by subordinates and fewer job problems. The out-group relations are established strictly based on official rules, policies, authority relations, and contracts, and hence the out-group is defined by low trust, interaction, support, and rewards (Dienesch & Liden, 1986). Therefore, the quality of the relationship between a leader and a member is better than the out-group because the in-group relations are not only based on formal agreements and obligations in a contract (Herman, Tse & Troth, 2013). The LMX
quality describes how effective leadership relationships improve between binary partners in and between organisations (e.g., leaders and followers, team members and teammates, employees and their competence networks, joint venture partners, suppliers’ networks, and so forth) (Graen & Uhl-Bien, 1995; Farrell & Rusbult, 1981).

However, people were taught that it is wrong to form in-groups or cliques because they are harmful to those who cannot be part of such a group. Because LMX theory divides the work unit into two groups and one group receives special attention, it gives the appearance of discrimination against the out-group. For instance, some culture replete with different genders, ages, cultures and abilities who have been discriminated against, though LMX was not designed to do so, it supports the development of privileged groups in the workplace. In so doing, it appears unfair and discriminatory.

Organizational Citizenship Behaviour (OCB)

OCB refers to discretionary that employees choose to do, spontaneously and of their own accord, which often lies outside of their specified contractual obligations. For example, OCB may be reflected in favourable supervisor and coworker ratings, or better performance appraisals. In this way, it can facilitate future reward gain indirectly. Substantively, citizenship behaviour is important because they lubricate the social machinery of the organisation. They provide the flexibility needed to work through unforeseen contingencies, and they enable participants to cope with the otherwise awesome condition of interdependence on each other. Farh, Zhong and Organ (2004) described organisational citizenship behaviours as those actions that are not demanded by the formal job responsibilities. Although OCBs are coveted by organisations, they are only exhibited based on employees’ discretion. This implies that these behaviours cannot be enforced by an organisation because they are not stipulated in the employment contract as part of their job descriptions.

Organ (1988) described five categories of OCB, which include (i) Altruism: helping other members of the organisation in their tasks (e.g., voluntarily helping less skilled or new employees, assisting co-workers who are overloaded or absent and sharing work strategies), (ii) Courtesy: that an employee treats others with respect and prevents problems arising from the work relationship, (iii) Sportsmanship: indicates that employees do not complain but have positive attitudes (e.g., petty grievances), (iv) Civic Virtue: suggests that the employees responsibly participate in the political life of the organisation (e.g., attending meetings/functions that are not required but are helpful for the organisation, keeping up with the changes in the organisation and
taking the initiative to recommend how procedures can be improved) and (iv) 
Conscientiousness: means that employees carry out in-role behaviour well beyond the 
minimum required levels (e.g., working long days, voluntarily doing things besides 
duties, following the organisation’s rules and never wasting time).

**Theoretical Framework**

**Role Theory** (Katz & Kahn, 1966): Role theory, first discussed in the 1960s, 
suggests that organisational processes affect the physical and emotional behaviour of 
an individual in the workplace. Role status refers to the categorisation of the 
relationship role of a subordinate relative to the leader and group. Role perceptions 
refer to the leader’s and subordinate’s views of the expectations or roles of a specific 
job. Individuals will often differ on the role perceptions because of differing social 
cues (Van Dyne et al., 2008).

Further, employees are more likely to engage in extra-role behaviour if there is a 
high-quality relationship between the leader and the follower. Role clarity is theorised 
to have a developmental impact on LMX at the early stage of a relationship and later 
through effective perception attributes such as agreeableness (Sears & Hackett, 2011). 
This suggests that roles play an important part in altering the quality of the exchange 
and LMX in a leader-follower relationship and may be cultivated through clarity to 
 improve LMX quality.

From the perspective of LMX theory, the roles that supervisors and subordinates 
take on in a high-quality relationship mature and stabilise over time. The relationship 
goes through three stages of role-development before it is fully established (Graen & 
Scandura, 1987). Role-taking: The relationship starts with the initial interaction of the 
supervisor and subordinate. As both the supervisor and subordinate become 
acquainted with each other, they assess each other and decide whether the relationship 
will remain at this stage or evolve into one of higher quality. Role-making: This stage 
is where the leader and the member have started forming a meaningful relationship. 
The leader and the member influence each other’s attitudes and behaviours about the 
organisation and themselves, and a shared reality emerges between the two 
individuals (Graen & Scandura, 1987; Scandura & Lankau, 1996).

Role-routinization: at this point, the leader depends on the member and sees him 
or her as a “trusted assistant.” Role-routinization is a relationship built on trust, 
maturity, and open communication (Graen & Uhl-Bien, 1995). The supervisor will 
choose the member to complete challenging and rewarding tasks, with full trust that 
the member will succeed in such a task. The subordinate reciprocates to the leader in 
several fashions. For instance, the member may reciprocate by covering another
employee’s duties when that particular employee is away, as this adds to organisational efficiency.

3. Methodology

This study adopts a survey research design (descriptive survey research) which utilises questionnaire or interview methods and enables the researcher to obtain the opinion of the representative sample of the target population. Respondents were allowed their views about the subject enquiry without manipulation of the expressed opinion. The population of this research work consists of 364 workers in Tuyil Pharmaceutical Industry, Ilorin. The population includes male and female workers, and supervisors and subordinate. For this study to be scientific, Taro Yamane sampling technique was adopted to ascertain the sample size from the population. The calculation is shown below;

\[
n = \frac{N}{1 + N(e)^2}
\]

Where, \( n \) = corrected sample size; \( N \) = Population size; \( E \) = margin of error (0.05 significant level)

\[
n = \frac{364}{1 + 364(0.05)^2}
\]

\[
n = \frac{364}{1 + 364(0.0025)}
\]

\[
n = \frac{364}{1 + 0.91}
\]

\[
n = \frac{364}{1.91}
\]

\[
n = 190.6
\]

Therefore, the sample size is 191 samples selected from the population.

Furthermore, since the population of the study comprises male and female workers, subordinate and supervisor, simple random sampling technique was further used to distribute the questionnaires among staff member to ensure that sampling unit of the population has an equal chance of being selected.

The information obtained from the respondents were collated, summarised, analysed and presented in tables to show frequency, percentage distribution, tables
and cumulative percentage. At the same time, least-square regression model of inferential statistics was fitted to the data to assess the relationship between variables.

**Discussion of Findings**

**Hypotheses one:** In testing hypothesis, 1, the null hypothesis (Ho) formulated as follows: There is no significant relationship between High-Quality LMX and Altruism.

**Table 1**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.522&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.348</td>
<td>.335</td>
<td>.951</td>
</tr>
</tbody>
</table>

Predictors: (Constant), High-Quality LMX
Dependent variable

*Source: Field Survey, 2018.*

The result shows the $R^2$ which is the coefficient of determination which gives approximately 35% which implies that 35% of Altruism (dependent variable) is contributed by High-Quality LMX (independent variable) while the remaining 65% of the Altruism may be affected and determined by the other unexplained factors.

**Table 2**

**ANOVA<sup>a</sup>**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>1.654</td>
<td>1</td>
<td>1.654</td>
<td>1.827</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>161.146</td>
<td>178</td>
<td>.905</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>162.800</td>
<td>179</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> Dependent Variable: Altruism
<sup>b</sup> Predictors: (Constant), High-Quality LMX

*Source: Field Survey, 2018.*

F-statistic as shown from the ANOVA table above is significant since the ANOVA significance of .000 is less than the alpha level of 0.05, thus result as achieved and hypothesis rejected. The implication of this is that the independent variable (High-Quality LMX) accounted for the variation in the dependent variable (Altruism). Also, the regression sum of the square of 161.146, further showing the significance of the overall model.
Table 3

Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardised Coefficients</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>3.649</td>
<td>.365</td>
<td>9.996</td>
<td>.000</td>
</tr>
<tr>
<td>High Quality LMX</td>
<td>.811</td>
<td>.085</td>
<td>.522</td>
<td>1.352</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Altruism
b. Predictors: (Constant), High-Quality LMX


The coefficient of the independent variable indicated that High-Quality LMX (.811) has a greater effect on Altruism. Besides, the {probability} and t-statistics value of {.000} and 1.352 further suggest that the relationship between High-Quality LMX and Altruism is significant since the alpha level of .05 is greater than the p-value of 0.000. The conclusion, therefore, is that the null hypothesis is rejected and alternative hypothesis accepted, that is, there is a significant relationship between High-Quality LMX and Altruism.

For hypothesis one, the coefficient of the independent variable indicated that high-quality LMX (.811) has a greater effect on Altruism. Besides, the probability and t-statistics value of (.000) and 1.352 suggested that the relationship between high-quality LMX and Altruism is significant since the alpha level of 0.05 is greater than the p-value of 0.000. The conclusion, therefore, was that the null hypothesis is rejected and alternative hypothesis accepted, that is there is a significant relationship between high-quality LMX and Altruism. This is concerning Peng and Chiu (2010), who found stronger organisational fit and commitment as well as followers who were more likely to display OCB when leaders provided high-quality feedback. Further, Peng and Chiu proposed that the quality of the feedback environment had a cumulative effect on job stress, role clarity and display of feedback. Loi et al (2010) discovered that LMX positively related to Altruism and when under stressful situation such as concern for job security, the employee in a high-LMX relationship would revert to altruistic behaviour to benefit rather than the organisation indicating the effect power can have in the relationship. Also, they theorised that under less stressful situations, LMX was not positively related to Altruism, indicating that improving high-quality LMX can improve job performance and the direct effect behaviours and social exchanges have on the LMX relationship.
Hypotheses two: In testing hypotheses 2, the null hypothesis (Ho) formulated as follows: there is no significant relationship between High-Quality LMX and Civic Virtue in Tuyil.

Table 4

Model Summary

<table>
<thead>
<tr>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>.803</td>
<td>.649</td>
<td>646</td>
<td>1.237</td>
</tr>
</tbody>
</table>


The result shows the $R^2$ which is the coefficient of determination gives approximately 65% which implies that 65% of Civic Virtue (dependent variable) is affected by Low-Quality LMX (independent variable) while the remaining 35% of the variation in the dependent variable may be affected and determined by the other unexplained factors.

Table 5

ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>1.772</td>
<td>1</td>
<td>1.772</td>
<td>3.875</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>81.428</td>
<td>178</td>
<td>.457</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>83.200</td>
<td>179</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Civic Virtue
b. Predictors: (Constant), Low-Quality LMX


The F-statistic as shown from the ANOVA table above is significant since the ANOVA significance of .000 is less than the alpha level of 0.05, thus result as achieved and hypothesis rejected. The implication of this is that the independent variable (Low-Quality LMX) accounted for the variation in the dependent variable (Civic Virtue). Also, the regression sum of the square of 81.428, further showing the significance of the overall model.
Table 6

Coefficients\(^{a}\)

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardised Coefficients</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>.341</td>
<td>.365</td>
<td>.428</td>
<td>.000</td>
</tr>
<tr>
<td>Low-Quality LMX</td>
<td>1.648</td>
<td>1.645</td>
<td>.803</td>
<td>10.531</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Civic virtue  
b. Predictors: (Constant), Low-Quality LMX  


For hypothesis two, the coefficient of the independent variable indicated that high-quality LMX (3.924) has a greater effect on Civic Virtue. Besides, the probability and t-statistics value of (.000) and 7.411 suggested that the relationship between high-quality LMX and Civic Virtue is significant since the alpha level of 0.05 is greater than the p-value of 0.000. The conclusion, therefore, was that the null hypothesis is rejected and alternative hypothesis accepted, that is there is a significant relationship between high-quality LMX and Civic Virtue. This is about Yunus, et al (2010) who theorised that LMX moderates OCB variables of Civic Virtues and emotional intelligence providing evidence that a leader's emotional intelligence changes a subordinate’s OCB, and increase the quality of the leader-subordinate relationship. Therefore, the quality of the relationship between a leader and subordinate influences team and individual commitment within the organisation and is an important factor in predicting OCB.

This is not concerning (Xu, Huang, Lam & Miao, 2012) characteristics of low-quality relationships which are turnover, lack of organisational engagement, lower task performance, less assistance of coworkers and lower OCB. Medler, Liraz and Kank (2012) discovered that low-quality relationships between a leader and follower in a service environment encourage follower negative emotions that can leach into abusive service incidents. Xu et al (2012) reported that poor exchange relationships between a supervisor and subordinate lead to lower motivation to perform, withheld resources and lower commitment. Further, an abused subordinate may reciprocate his or her treatment with other coworkers, increasing organisational dysfunction. Xu et al (2012) maintained that LMX mediates the negative association of abusive supervision and employee in-role performance and that a negative association may exist between abusive supervision and the likelihood an employee will perform extra-role
behaviours such as OCB. In other words, abusive supervision negatively influences the exchange relationship and the employee’s willingness to perform above and beyond his or her normal work.

**Conclusion and Recommendations**

Leader-member exchange contributes to organisational effectiveness through the effect of high-quality relationships on the extent to which employee engage in behaviours beyond their prescribed role. High-quality LMX that is based on mutual trust, loyalty and respect of leader and follower towards each other leads to a higher level of OCB. Since there is a significant relationship between high-quality LMX and Altruism, conscientiousness, civic virtue, this implies that employees have faith in each other and are willing to help their coworkers with work-related problems because of a good quality relationship. Likewise, employees’ adherence to the rules and regulations result in some positive effects which include timeliness and decrease in employee absenteeism.

More so, employees are willing to involve in the routine and non-routine matters of organisation for the projection of a good image of the organisation. Also, there exists a significant relationship between low-quality LMX and courtesy which implies that employees try to avoid inconvenience to others that may result from one’s actions or inactions despite the poor relationship between the leader and the follower (employee), although this result is not consistent with similar research. Courtesy behaviour is capable of bringing harmonious relationship and improved productivity among coworkers in an organisation by preventing problem with teammates. Finally, the study revealed a great effect of low-quality LMX on Sportsmanship and this is inconsistent with similar researches as it implies that the poor relationship between leaders and followers affects employees’ tolerance for the inevitable inconveniences associated with the work without complaining. The following recommendations were suggested;

i. Supervisors and subordinates within the organisation should be educated on the need and benefit of establishing and maintaining high-quality LMX relationships, especially in organisations in which personnel problems are more prevalent.

ii. Future research should focus on low-quality LMX and Sportsmanship, which should be tested to discover if it would yield a similar or different result.

iii. Human resource personnel should hold regular leadership training to educate supervisors on LMX theory, antecedents and outcomes of LMX be communicated henceforth.
References


ASYMMETRIC OIL PRICE AND INFLATION: EVIDENCE FROM NET OIL EXPORTING COUNTRIES IN AFRICA

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Abstract

This paper explores the Pooled Mean Group Estimation piloted by Pesaran et al (1999) to examine the impact of asymmetric oil price on inflation in selected net oil exporting countries in Africa. This technique permits us to gauge the influence of oil price volatility on inflation, and also able to capture possible asymmetric adjustment of the inflation towards its long-run equilibrium. The findings suggest that both positive and negative oil price changes (β=0.0409; p=0.849 and β=0.3763; p=0.065 respectively) had an insignificant positive effect on inflation on the Africa net oil-exporting countries. The study concluded that oil price changes had an insignificant impact on inflation in the Africa net oil-exporting countries in the long run but seems to be diverse in the short-run. This, however, may not be unconnected with the role of fiscal policy measures institutionalized by the respective government of the selected Africa’s net oil exporting countries as revealed in the findings. The paper offers that each of the selected Africa’s net oil exporting countries should expand their consumption expenditure and develop their manufacturing export capability in order to inspire domestic production of quality food in large quantity considering the fact that it can be used as counteractive measure against inflation.

Key words:
Inflation, asymmetric oil price, Panel autoregressive distributed lag, Net Oil- Exporting, OPEC.

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1. Introduction

This paper explores the effects of asymmetric oil price on inflation by means of the dynamic heterogeneous panel mean group autoregressive model (PMG/ARDL). In fact, PMG/ARDL is explored in order to analyze non-stationary dynamic heterogeneous panels due to its capabilities to restrain long-run coefficients of the estimated model to be homogeneous and permits the short-run coefficients and error variances to diverge across groups. It has long been anticipated that the rapid fluctuation of oil prices is one of the significant and unforeseen forces of the global economy which often contributes to the economic recessions. The changes in price of oil influence inflation in three-way. As it constitutes a proportion of household consumption, the rise in oil prices influences inflation through its effect on the household. This ratio includes the quantity of resources used in the production and distribution of certain goods of this kind. The other effect is expressed by product prices in the form of consumer prices. The higher price of fuel is passed to the costs of finished products by companies and industries. This has an indirect effect on the index of consumer prices. The third factor is that a further rise in unemployment and wage increases can be expected.

An array of empirical literature, along with theoretical explanations, have been looked into possible relationship as regards to oil prices, and alongside attendant macroeconomic variables (Hamilton, 1983; Lee, Ni, & Ratti, 1995; Mork, 1989; Blanchard & Gali, 2007; Tang, W., Wu, L., & Zhang, 2010; Herrera, Lagalo & Wada, 2011; Iwayemi & Fowowe, 2011; Hamilton, 2011; Evgenidis, 2018; Sek, 2017; Artami & Hara, 2018; Lahiani, 2018; Ahmed, Bhutto, & Kalhoro, 2019; etc.) Some of the earlier studies on the debate report a sizable adverse link between oil price variations and output (Mork, 1989). Consequently, oil prices have not impacted macroeconomic output since the mid-1980s. As a result of lowering oil prices, GDP growth is no longer increasing by the same magnitude as it would decrease after an equivalent increase in oil prices. However, worthy of note in the literature are the asymmetric effects of changes to the oil prices on oil importers. Oil price increases have been proven to be detrimental, but oil price declines have little to no significant impacts on economic output in the United States and some OECD countries (Hamilton, 2008; Herrera, et al., 2011). In oil exporting countries, however, the direction of the shocks is reverse; positive shocks contribute to greater oil prices and negative impact to lesser oil prices.

Other insights have become possible by investigating data of a growing time span and choice of methodology. For example, it was argued that that the degree of
correlation between oil price changes and macroeconomic factors has weakened over time (see Iwayemi & Fowowe, 2011). Depending on the respective degree of correlation, the economy has been vulnerable to a negative change in the oil market over time. Thus, there is renewed discourse on why the impact of oil is weakening. The change may be attributed to, and a multifaceted flexibility in enthralling shocks through monetary and fiscal policies. Further observations were possible through the analysis of data of a growing period and variation of methodology. For example, the degree to which shifts in oil prices and macroeconomic factors have interacted over years are proposed to have weakened (see Iwayemi & Fowow, 2011). Regardless of the degree of correlation, over time, the economy has been vulnerable to negative changes in the oil market. Hence, the question that resolves around how and why the influence of oil is being diminished? The fluctuations can be attributed to multifaceted roles monetary and financial policies in enthralling the oil shocks.

This article adds in many ways to established knowledge. Firstly, the paper analyzed the declining linkage of inflationary changes in oil prices. This was gauged by separating the changes in oil price into negative and positive oil prices. The paper assumes inflation is not only due to traditional inflation rates but also to the inflation source which necessitates the use of consumer price index (CPI). Also, this paper focuses on group of net oil-exporting countries namely Libya, Gabon, Algeria, Nigeria and Angola, depend solely on oil sector, where more than 70% of the gross domestic product (GDP) is from oil sale proceed. Hence, it is argued that any dramatic changes in GDP may lead to price instability in these countries. This necessitated the inclusion GDP in the model. Thirdly, the paper extends the review period to 2016 in order to re-estimate and affirm the findings of earlier literature. These goals became relevant as dramatic oil price changes as many of the countries have witnessed different macroeconomic policies with regard to the conducts of minimizing the cost of oil production. Overall, this paper, in contrast to the existing literature, which focused on examining the impact of oil prices in African countries through the use of a symmetric time-series model, presents recent empirical research that contributes to answering the question whether there is a non-linear impact of positive and negative oil price changes on inflation in African OPEC member countries. The rest of the paper is structured as follows: Section one focuses on the background while section two presents an overview of existing literature with regards to oil price changes and inflation. Section three defines the methodology. Section four offers the empirical results and discussions while section five concludes the paper with main findings and policy recommendation.
2. Review of Empirical Literature

The literature on oil price volatility, inflation, and growth relationship has stimulated various reactions with different empirical findings from developed, emerging and developing countries. Besides, a remarkable number of studies report that oil price shocks impact inflation (e.g. Lahiani, 2018; Artami & Hara, 2018; Sek, 2017; Hooker, 2000, etc.). For instance, Lahiani (2018) reported an evidence of asymmetry in the relationship between the oil prices and inflation. However, diverse impacts may arise for individual country due to economic structure. Katircioğlu et al. (2015) examined the impact of oil price behaviour on macroeconomic aggregates of twenty-six OECD countries. The authors stated that oil prices have a statistically significant and negative effect on macroeconomic indicators, particularly in the OECD countries. Artami and Hara (2018) analyzed the asymmetric impact of oil price fluctuations on the inflation in Indonesia through the vector autoregressive (VAR) estimation model spanning from the first quarter of 1990 and fourth quarter of 2016. The authors resolved that the oil price-growth relationship is asymmetric. There was also a statistically significant impact on inflation from both the positive and negative fluctuations in oil prices. Also, Kara (2017) affirmed the influence role of regulatory authorities in ensuring the stabilization of the macroeconomy during the oil price volatility in the United States of America.

Ahmed, Bhutto, & Kalhor (2019) studied the link between oil price changes and some key macroeconomic factors for five SAARC countries spanning over 1982 to 2014. The authors further contended that using the Impulse Response function (IRF) exposed the significant disparity amongst all key macro-economic indicators in response to exogenous oil price shocks at different time horizons. Evgenidis (2017) examined the asymmetric impacts of oil price crises on the eurozone countries by exploring the VAR threshold method. According to the source, this approach captures the dependence of the oil price shock transmission cycle on the sign of shock and the various economic states. The author reveals that fluctuations in oil prices affect inflation differently. While Tang et al. (2010) employed a structural vector autoregressive (SVAR) model to confirm whether oil price increase positively influences inflation rate in China. They resolved that oil price increase positively influences inflation in the country. The authors further explained that the price control policy intervention contributes to macroeconomic stability.

Similarly, Nusair (2016) also explored the impact of oil prices on the Gulf Cooperation Council (GCC) economies through a non-linear analysis. The findings shown that positive fluctuations in oil prices have significantly higher impact on real
output growth through the use of the VAR panel technique. Sek (2017), using linear and non-linear auto-regressive distribution lags (ARDL) models, has recently explored the effect of changes in oil prices on Malaysia's domestic inflation in at disaggregated levels. Empirical studies show that changes in the impact of oil prices on domestic prices across industries have shifted symmetrically and asymmetrically. Changes in oil prices have a positive impact on higher output growth, but can lead directly to higher import and production prices in the long term across cost channels. Against this perspectives, it is noted that there are mixed conclusions from studies on a number of countries and employed methodologies.

3. Methodology and Data

The paper employed dynamic panel model estimator, PMG/ARDL advocated by Pesaran, Shin & Smith (1999) to examine the impact of asymmetric oil price changes on inflation of net oil exporting countries in Africa. The PMG estimator is applicable for analyzing non-stationary dynamic heterogeneous panels due to its capabilities to restrain long-run coefficients of the estimated model to be homogeneous and permits the short-run coefficients and error variances to diverge across groups in the panel. Thus, following Salisu, et al. (2017) to specify the asymmetric version of the Panel ARDL as:

\[ \Delta cpi_{it} = a_0 + a_{1i}cpi_{i,t-1} + a_{2i}y_{i,t-1} + a_{3i}OP_{i,t-1}^+ + a_{4i}OP_{i,t-1}^- + \sum + \sum_{j=0}^{n_3} (v_{ij}^+ \Delta OP_{i,t-j}^+ + v_{ij}^- \Delta OP_{i,t-j}^-) + \mu_i + \epsilon_{it} \]  \hspace{0.5cm} (1)

where \( \mu_i \) and \( i \) denote the joint-specific effect and the number of sets respectively. \( t \) represents the number of times while \( cpi_t \) is the logarithm of consumer price index explored to represent inflation. \( y_t \) denotes the logarithm of economic performance (proxy with real GDP growth rate) and \( OP_t \) is the logarithm of oil price. The log conversion of the variables aids the calculation of elasticity coefficients for the oil price-inflation relationship. The model equation (1) divided the oil price variable into \( OP_{it}^+ \) and \( OP_{it}^- \) indicating positive and negative changes of oil price separately, which is expressed hypothetically as:

\[ OP_{it}^+ = \sum_{j=1}^{t} \Delta OP_{ij}^+ = \sum_{j=1}^{t} \max (\Delta OP_{ij}, 0) \]  \hspace{0.5cm} (2)

\[ OP_{it}^- = \sum_{j=1}^{t} \Delta OP_{ij}^- = \sum_{j=1}^{t} \min (\Delta OP_{ij}, 0) \]  \hspace{0.5cm} (3)

Equation (1), can be re-specified and incorporate an error correction term to make equation (4) as:
Asymmetric Oil Price and Inflation: Evidence from Net Oil Exporting Countries in Africa

\[
\Delta CPI_{it} = r_i \varphi_{i,t-1} + \sum_{j=1}^{n_1}\omega_{ij}\Delta OP_{i,t-j} + \sum_{j=0}^{n_2}\kappa_{ij}\Delta y_{i,t-j} + \sum_{j=0}^{n_3}(v_{ij}^{+}\Delta OP_{i,t-j}^{+} + v_{ij}^{-}\Delta OP_{i,t-j}^{-}) + \mu_i + \epsilon_{it}
\]  

(4)

However, the error-correction term that accounts for the long run equilibrium is symbolized in the asymmetric Panel ARDL as \( \varphi_{i,t-1} \). While \( r_i \) represents its related restriction, which is the promptness of adjustment term that processes how long it takes the system to modify to its long run when there is a shock. The Data for the period of review, 1995:1 to 2017:4 were sourced from the World Bank Development Indicators and the Organization of Petroleum Exporting Countries (OPEC) Bulletins, various issues. It covers five Africa’s oil exporting countries, specifically the member of OPEC, namely Nigeria, Libya, Angola, Gabon and Algeria. The oil price levels were employed to generate the quarterly data set incorporated in the model as \( OP_t \). The other independent variables are real GDP growth, inflation rate and government final consumption expenditure. The choice of control variables is informed by both theory and empirical evidence. Thus, the paper also explored the following processes in order to carry out the investigation on the subject. Firstly, they deemed it fit to carry out the preliminary assessment of the data using the descriptive statistics and of the stability of the variables through use of Levin-Lin-Chu Unit root test. Subsequently, the examination will be carried out using the dynamic heterogeneous panel mean group autoregressive model (PMG/ARDL).

4. Results and Discussions

Panel Unit-Root Test

The ability to determine whether or not the variables are stationary is one of the conditions suggested for the PMG / ARDL undertaking. The paper used the Levin-Lin-Chu (LLC) approach to the unit-root test to confirm the stationarity of each variable. Table 1 presents the results of the Levin-Lin-Chu (LLC) root test. The results show that the null hypothesis could not be rejected at the level of the variables: LnCPI, NEG OIL and POS OIL. Other variables, such as LnRGDP GR and LnGEXP, are stationary during the first difference. This suggests that stationarity results from the Levin-Lin-Chu (LLC) unit-root technique confirm the fact that all the variables are free from the unit-root in the first difference.
### Table 1

Levin-Lin-Chu Panel Unit Root Test

<table>
<thead>
<tr>
<th>Variables</th>
<th>Level</th>
<th>1st Difference</th>
<th>Order of Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T-statistics</td>
<td>P-value</td>
<td>T-statistics</td>
</tr>
<tr>
<td>LnCPI</td>
<td>1.95556</td>
<td>0.0253**</td>
<td></td>
</tr>
<tr>
<td>LnRGDP_GR</td>
<td>2.75957</td>
<td>0.9971</td>
<td>-2.04247</td>
</tr>
<tr>
<td>LnGEXP</td>
<td>0.64438</td>
<td>(0.7403)</td>
<td>-1.91495</td>
</tr>
<tr>
<td>NEG_OIL</td>
<td>-8.58540</td>
<td>(0.0000)*</td>
<td></td>
</tr>
<tr>
<td>POS_OIL</td>
<td>-9.07012</td>
<td>(0.0000)*</td>
<td></td>
</tr>
</tbody>
</table>

* represents 1% level of significance    ** represents 5% level of significance

**Source:** Author’s computation (2019).

### PMG Results

The PMG results in table 2 showed that both positive and negative oil price changes positively impact inflation in the long-run but insignificantly. The finding corroborated the result of Artami & Hara (2018) that both positive and negative oil price changes positively insignificantly related to inflation. The results from the model of oil prices revealed that one per cent increases in the global oil price (positive oil prices) are related to 4.09% per cent increases in inflation in the long-run. While one per cent decline in the global oil price (negative oil prices) is linked to a 37.6% increase in inflation in the long-run. The study affirmed that the work of Adeniyi, et al (2012) that a percent increase in oil prices lead to a 0.04 percent increase in domestic inflation in both the short run and long run. The finding opposed to the finding of Choi, el al (2018) that opined that positive oil price changes pose a substantial effect than negative oil price volatility. The findings also reveal that LN RGDP_GR, proxy for economic performance significantly impact inflation negatively in the long-run.
Table 2

ARDL/PMG Results of Panel of 5 oil-exporting countries in Africa

<table>
<thead>
<tr>
<th>Variable</th>
<th>-Coefficient</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Long Run Equation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POS_OIL</td>
<td>0.040916</td>
<td>0.190297</td>
<td>0.8492</td>
</tr>
<tr>
<td>NEG_OIL</td>
<td>0.376388</td>
<td>1.846430</td>
<td>0.0656</td>
</tr>
<tr>
<td>LNRGDP_GR</td>
<td>-0.241384</td>
<td>-3.688072</td>
<td>0.0003**</td>
</tr>
<tr>
<td>LNGEXP</td>
<td>0.403893</td>
<td>7.728025</td>
<td>0.0000**</td>
</tr>
<tr>
<td><strong>Short Run Equation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECT</td>
<td>-0.027204</td>
<td>-1.714626</td>
<td>0.0872</td>
</tr>
<tr>
<td>D(POS_OIL)</td>
<td>0.003523</td>
<td>0.483941</td>
<td>0.6287</td>
</tr>
<tr>
<td>D(NEG_OIL)</td>
<td>-0.005886</td>
<td>-2.078151</td>
<td>0.0384**</td>
</tr>
<tr>
<td>D(LNRGDP_GR)</td>
<td>-0.010378</td>
<td>-0.217188</td>
<td>0.8282</td>
</tr>
<tr>
<td>D(LNGEXP)</td>
<td>0.012708</td>
<td>0.804265</td>
<td>0.4217</td>
</tr>
</tbody>
</table>

**Notes:** Dependent variable is the log of CPI.

*significant at 5 per cent level

**Source:** Author’s computation (2019).

This study, however, suggested that negative oil price volatility pose a substantial effect than positive oil price in the selected oil exporting countries. The finding differed slightly in the short-run. The negative oil price volatility exerts a negative relationship in the short-run. Additionally, it was found that output growth negatively impacts the consumer price in the African OPEC countries. It is shown that one per cent increase in real GDP growth is associated with a 0.0236 per cent reduction respectively in inflation in the long-run with the oil prices. This observation is in line with the actual situation occurring in Africa’s net oil exporting countries.
### Table 3

Short-run country-specific results from the ARDL/PMG estimator

<table>
<thead>
<tr>
<th>Country</th>
<th>Variable</th>
<th>Coefficient</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algeria</td>
<td>ECT</td>
<td>-0.035991</td>
<td>-111.7452</td>
<td>0.0000**</td>
</tr>
<tr>
<td></td>
<td>D(POS_OIL)</td>
<td>-0.001352</td>
<td>-18.77334</td>
<td>0.0003**</td>
</tr>
<tr>
<td></td>
<td>D(NEG_OIL)</td>
<td>-0.005072</td>
<td>-61.87315</td>
<td>0.0000**</td>
</tr>
<tr>
<td></td>
<td>D(LNRGDP_GR)</td>
<td>0.089239</td>
<td>2.256011</td>
<td>0.1093</td>
</tr>
<tr>
<td></td>
<td>D(LNGEXP)</td>
<td>-0.023968</td>
<td>-17.81252</td>
<td>0.0004**</td>
</tr>
<tr>
<td>Angola</td>
<td>ECT</td>
<td>-0.004862</td>
<td>-940.7491</td>
<td>0.0000**</td>
</tr>
<tr>
<td></td>
<td>D(POS_OIL)</td>
<td>0.023048</td>
<td>68.00374</td>
<td>0.0000**</td>
</tr>
<tr>
<td></td>
<td>D(NEG_OIL)</td>
<td>-0.010773</td>
<td>-34.90988</td>
<td>0.0001**</td>
</tr>
<tr>
<td></td>
<td>D(LNRGDP_GR)</td>
<td>-0.139335</td>
<td>-2.623015</td>
<td>0.0788</td>
</tr>
<tr>
<td></td>
<td>D(LNGEXP)</td>
<td>-0.013345</td>
<td>-30.37559</td>
<td>0.0001**</td>
</tr>
<tr>
<td>Gabon</td>
<td>ECT</td>
<td>-0.015746</td>
<td>-177.0601</td>
<td>0.0000**</td>
</tr>
<tr>
<td></td>
<td>D(POS_OIL)</td>
<td>0.008091</td>
<td>162.3609</td>
<td>0.0000**</td>
</tr>
<tr>
<td></td>
<td>D(NEG_OIL)</td>
<td>-0.007762</td>
<td>-153.8858</td>
<td>0.0000**</td>
</tr>
<tr>
<td></td>
<td>D(LNRGDP_GR)</td>
<td>0.089916</td>
<td>12.71422</td>
<td>0.0010**</td>
</tr>
<tr>
<td></td>
<td>D(LNGEXP)</td>
<td>0.031932</td>
<td>57.47239</td>
<td>0.0000**</td>
</tr>
<tr>
<td>Libya</td>
<td>ECT</td>
<td>-0.084511</td>
<td>-212.7888</td>
<td>0.0000**</td>
</tr>
<tr>
<td></td>
<td>D(POS_OIL)</td>
<td>-0.021074</td>
<td>-129.4877</td>
<td>0.0000**</td>
</tr>
<tr>
<td></td>
<td>D(NEG_OIL)</td>
<td>-0.010485</td>
<td>-47.59595</td>
<td>0.0000**</td>
</tr>
<tr>
<td></td>
<td>D(LNRGDP_GR)</td>
<td>0.011304</td>
<td>661.4571</td>
<td>0.0000**</td>
</tr>
<tr>
<td></td>
<td>D(LNGEXP)</td>
<td>0.063210</td>
<td>56.53931</td>
<td>0.0000**</td>
</tr>
<tr>
<td>Nigeria</td>
<td>ECT</td>
<td>-0.005089</td>
<td>74.23537</td>
<td>0.0000**</td>
</tr>
<tr>
<td></td>
<td>D(POS_OIL)</td>
<td>0.008902</td>
<td>50.73020</td>
<td>0.0000**</td>
</tr>
<tr>
<td></td>
<td>D(NEG_OIL)</td>
<td>0.004661</td>
<td>28.18600</td>
<td>0.0001**</td>
</tr>
<tr>
<td></td>
<td>D(LNRGDP_GR)</td>
<td>-0.103014</td>
<td>-1.621389</td>
<td>0.2034</td>
</tr>
<tr>
<td></td>
<td>D(LNGEXP)</td>
<td>0.005708</td>
<td>7.039849</td>
<td>0.0059**</td>
</tr>
</tbody>
</table>

*Notes:* Dependent variable is the log of CPI.

*significant at 5 per cent level

*Source:* Author’s computation (2019).

Meanwhile, Table 3 presented the estimation results for individual countries. The ECT coefficients suggested evidence of convergence toward the short-run equilibrium
for all countries. The country-specific results revealed that negative oil price changes exerted a negative and significant effect on the inflation of four out of the five Africa oil-exporting countries within OPEC, except Nigeria with a positive and significant relationship. These results implied that in the long run, a 1 per cent decrease in the global oil price volatility will lead to a 0.5%, 1.07%, 0.776% and 1.048% decrease in inflation in Algeria, Angola, Gabon, and Libya respectively. While a per cent decrease in the global oil price will lead to a 0.46% increase in inflation in Nigeria. The positive oil price exerted a negative and significant effect on the inflation of Algeria and Libya. The results suggested a positive and significant effect of positive oil price volatility on the inflation of Angola, Gabon, and Nigeria. This result suggested that in the short-run a per cent increase (positive) in the global oil price will lead to a 0.14% and 2.11% decrease in inflation in Algeria and Libya respectively. A unit increase (positive) in the global oil price volatility will lead to a 2.3%, 0.8%, and 8.9% increase in inflation in Angola, Gabon, and Nigeria respectively. The results further showed that government final consumption expenditure, a proxy of fiscal policy is positively related to inflation in Gabon, Libya, and Nigeria.

5. Conclusion

The study explored an empirical analysis of the impact of oil price on inflation of oil net exporting countries in Africa over 1995:Q1 to 2017:Q4. The PARDL/PMG estimation results showed that both positive and negative oil price volatilities (β=0.0409; p=0.849 and β=0.3763; p=0.065 respectively) had an insignificant positive effect on inflation of the net oil-exporting countries in Africa. The study concluded that oil price had an insignificant impact on inflation in the Africa net oil-exporting countries in the long run but seems to be diverse in the short-run. The findings also reveal that government final consumption expenditure, a proxy of fiscal policy is positive and significantly impact inflation negatively in the long-run. This, however, may not be unconnected with the role of fiscal policy measures institutionalized by the respective government of the selected Africa’s net oil exporting countries as revealed in the findings. The paper offers that each of the selected Africa’s net oil exporting countries should expand their consumption expenditure and develop their manufacturing export capability in order to inspire domestic production of quality food in large quantity considering the fact that it can be used as counteractive measure against inflation. Each authority must therefore maintain and encourage the private sector to invest in and expand the agricultural sector. Monetary and fiscal policies are other tools used by policymakers to combat inflation and boost economic performance.
References


IMPACTS OF OIL PRICE VOLATILITY AND MONETARY POLICY ON ECONOMIC PERFORMANCE OF NON-OIL PRODUCING COUNTRIES IN AFRICA

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JEL Q 430

Abstract
The study investigates the impacts of oil price volatility and monetary policy on the economic performance of Africa's non-oil producing countries. Economic performance is proxy for the GDP growth rate and monetary policy is proxy for the interest rate and money supply. The oil price volatility is developed through GARCH process. The study covers a period from 1982 to 2018 and Panel Auto regressive Distributed Lag PANEL-ARDL is applied. The results show that both oil price volatility and monetary policy have significant impact on the economic performance of these countries, however, while oil price volatility has negative and transitory effect, expansionary monetary policy is shown to have sustained significant impact on their economic performance. The uniqueness of the study majorly lies in its scope and methodology. Past studies have concentrated on oil exporting countries alone and they have been focusing much on the effects of oil price volatility on their growth without assessing the role of monetary policy. The study fills these gaps.

Key words:
Oil price volatility, monetary policy, economic performance, Africa non-oil producing countries.

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1. Introduction

World crude oil price has entered into an era of higher price volatility due to geopolitical uncertainties, supply constraints, high refinery utilization and high demand growth (Kesicki, 2009. Omolade, Ngalawa and Kutu, 2019). The implication of this on non-oil producing countries is multifaceted in terms of policy responses to deal with uncertainties occasioned by the incessant oil price changes which have constituted shocks perturbing different economies of the world. The non-oil producing countries in Africa which is the focus of this study are unique in the sense that they do not have any proven oil production capacity hence these economies are highly affected by oil price movement (Saliu et al, 2019).

However, an important macroeconomic policy that has been used by different countries in the world to tackle the negative impacts of oil price volatility is the monetary policy. Appropriate monetary policy response during oil price fluctuations is believed will help economies to improve on their economic performance even in the face of oil price fluctuations. But on the contrary non-oil producing countries are found struggling to cope with oil price fluctuations often and this usually affects their economic performance especially during these periods. For instance, Kenya, which is a major non-oil producing economy in Africa, raised her gross expenditure by about 30% in 1980 during the second oil price shock when the oil price rose by about 70% (IMF, 2000). Countries like Mozambique, Rwanda, Zambia and Botswana which are also non-oil producing economies in Africa, among others, witnessed the same trend during these periods.

From the literature, the links between oil price volatility, monetary policy and economic performance of an oil importing country is explained within the contexts of real balance, inflation and wealth effects of oil price. According to (Brown and Yücel, 2002) oil price changes effect can be transmitted to economic activities of an oil importing country through the following channels:

1. Wealth transfer effect; indicating the transfer of wealth from oil importing countries to oil exporting countries and hence deteriorating terms of tread for oil importing countries.

2. Real balance effect; where an increase in oil prices would lead to increase in money demand. When monetary authorities fail to increase money supply to meet growing money demand, there would be a rise in interest rate and a retardation in economic growth.

3. Inflation effect; where a rise in oil price generates inflation. When the observed inflation is caused by oil price-increased cost shocks, a tight monetary
policy can deteriorate the long term output by increased interest rate and decreased investment.

Considering these facts, it is obvious that the channels explained above might be less pronounced in countries like South Africa, Cameroon and Ghana, among others, who might not be net oil producers but still have some local oil production capacities.

Based on the foregoing the relative effects of oil price changes on the economy of Africa’s non-oil producing economies can be controlled with the use of appropriate monetary policy that is following either tight or expansionary monetary policy. Hence understanding the relationship between oil price volatility, monetary policy and economic performance of these countries is very important.

Notwithstanding, few empirical studies such as Jeminez-Ridriguez and Sanchez (2012), Gupta (2007) among others have investigated oil price shock and economic growth of oil importing developed countries and some studies have also examined the same for developing countries like the Philippines (Raguindin and Reyes, 2005), Venezuela (El-Anashasy, 2005), Nigeria (Iwayemi and Fowowe, 2011), Iran (Farzanegan and Markwardt, 2009), Thailand (Raïq et al., 2009), Tunisia (Jbir and Zouari-Ghorbel, 2010) and China (Cong et al., 2008; Tang et al., 2010; Du et al., 2010). However, most of these studies are outside Africa and the role of monetary policy was not investigated in all the studies.

It is on this note that the present study aims at examining the effects of both oil price volatility and monetary policy on the economic performance of Africa's non-oil producing countries. This will enable the researcher to ascertain the current roles of both oil price volatility and monetary policy on the economic growth of these countries with a view to recommending appropriate action for the monetary authorities that will minimize the negative effects of oil price volatility on these economies.

The rest of the study is divided into literature review, methodology, results, discussions and conclusions.

**Literature Review**

(Omolade, Ngalawa, & Kutu, 2019) investigates the influence of crude oil price shocks on the macroeconomic performance of Africa’s oil-producing countries. Eight major net oil producers, namely, Algeria, Nigeria, Egypt, Angola, Gabon, Equatorial Guinea and Congo Republic are included in the study. Sudan is excluded due to data constraints. The study covers the period between 1980 and 2016, which represents the periods with the most boom and bust movements in crude oil prices. The Hamilton Index (1996) which uses the net oil price increase is applied. The study compares the
price of oil in each quarter with the maximum value observed during the preceding four quarters. This is used to derive sharp increases and declines in oil prices to capture oil price shocks. A Panel Structural Vector Auto-Regression model is adopted for analysis. The results show that the reaction of output to sharp increases and declines in oil prices differ. It is also observed that structural inflation accompanies sharp declines in oil prices more than monetary inflation, since both outputs and investment decline significantly.

(Saliu, Adedeji, & Ogunleye, 2019) This study examined the interrelationships among the monetary policy transmission mechanism, oil price shocks and output growth in the selected African oil producing countries. Data for the study were sourced from World Development Indicators published by the World Bank and the International Monetary Fund (World Economic Outlook). The study employed Structural Vector Autoregressive (SVAR) as estimation techniques. Findings from the SVAR Impulse Response Functions revealed that the overdependence on exploitation of oil by African oil producing countries without a corresponding diversification and switching to alternative sources of energy leads to ineffectiveness of oil economies in Africa to confront and combat some negative impacts of global oil price shocks. Findings from the study equally showed that the economies of oil producing countries in Africa are prone to shocks from the US real interest rate which represents the foreign interest rate. Finally, the study also showed that the expansionary monetary policy (in which interest rate is reduced to stimulate investment) is more effective in compensating and offsetting the negative effect of the decline in global oil price in the selected African oil producing countries.

(Van Eyden, Difeto, Gupta, & Wohar, 2019) uses a number of different panel data estimators, including fixed effects, bias-corrected least squares dummy variables (LSDVC), generalised methods of moments (GMM), feasible generalised least squares (FGLS), and random coefficients (RC) to analyse the impact of real oil price volatility on the growth in real GDP for 17 member countries of the Organisation for Economic Co-operation and Development (OECD), over a 144-year time period from 1870 to 2013. The main finding of the study is that oil price volatility has a negative and statistically significant impact on economic growth of the OECD countries in the sample. In addition, when allowing for slope heterogeneity, oil-producing countries are significantly negatively impacted by oil price uncertainty, most notably Norway and Canada.

(Herrera & Pesavento, 2009) investigates the changes in the response of the US economy to an oil price shock and the role of the systematic monetary policy response in accounting for changes in the response of output, prices, inventories,
sales, and the overall decline in volatility. The results suggest a smaller and more short-lived response of most macro variables during the Volcker-Greenspan period. It also appears that whereas the systematic monetary policy response dampened fluctuations in economic activity during the 1970s, it has had virtually no effect after the “Great Moderation”.

(Yoshino & Taghizadeh–Hesary, 2014) examines how monetary policy affected crude oil prices after the subprime mortgage crisis. The paper finds that after the subprime mortgage crisis the weaker exchange rate of the US dollar caused by the country’s quantitative easing pushed oil prices in US dollars upward over the period of 2009–2012, by causing investors to invest in the oil market and other commodity markets while the world economy was in recession in this period. This trend had the effect of imposing a longer recovery time on the global economy, as oil has been shown to be one of the most important production inputs.

Gaps in the literature

It is obvious from the studies reviewed that there is none based on non-oil producing countries in Africa. The few that focused on non-oil producing economies are outside Africa, Again, only few of the studies included monetary policy in their investigation. The literature appears to be awash with the effect of oil price on economic growth. Based on these identified gaps, the study investigates the relationship between oil price volatility, monetary policy and economic performance of Africa's non-oil producing countries.

2. Methodology

Research Design

This aspect of the research work focuses on the method of research embraced to be able to achieve all the objectives stated in chapter one. This section explains the theoretical framework which describes the theoretical underpinnings of the models adopted to achieve the objectives. Also the section contains the model specification which postulates the functional relationship between the dependent variable and the independent variables. Variable description and definitions as well as their sources are also described. Finally the estimating technique adopted for estimating the specified models are also discussed.

Study population/scope of the study

The criteria for selection of the countries that are categorized as non-oil producers in Africa are those without any proven oil reserve or production at all.
Consequently, all the countries in northern Africa are excluded from the study as each of them is either a net oil producer or oil producer. East Africa is dominated by non-oil producing countries and the following countries are selected: Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Mayotte, Mozambique, Reunion, Rwanda, Seychelles, Somalia, Uganda, Zambia, Tanzania and Zimbabwe. For West Africa, the following countries are selected: Senegal, Benin, Burkina Faso, Togo, Sierra Leone, Mali, Gambia, Liberia, Guinea, Guinea Bissau, Mauritania, Niger and Cape Verde. From Middle Africa, the CEMAC countries are excluded because they are predominantly net oil producers therefore, Central African Republic and Sao Tome and Principe are only included from this region. Southern African countries are mainly non-oil producing countries. Therefore, we include Botswana, Namibia, Swaziland and Lesotho in the study.

Again, the study period spans 1983 to 2018 because of data availability for all the countries coupled with the fact that the period is long enough to investigate the dynamic relationship among the variables included in the study.

Sources of data

The data on oil price is sourced from the OPEC database, 2019 while the remaining data on monetary policy variables and other macroeconomic variables for the countries are all extracted from the World Bank Tables, 2019 edition.

Theoretical framework

Considering the Keynesian national income identity where:

\[ Y = C + I + G + (X - M) \]  

(1)

Where \( Y \) is the output or national income, \( I \) is aggregate investment, \( C \) is aggregate consumption expenditure, \( G \) is the total government expenditure and \( X - M \) is the net income from abroad. \( M \) is import and \( X \) is export.

The model for this study is generated from the \( X - M \) in equation 1 where the external gap is explained. An important external gap model is the foreign exchange gap model of Findlay (1984), According to him, national income or economic growth is a function of export growth and propensity to import. Such that:

\[ Y = f(Xe^{gt}, mY) \]  

(2)

Where \( Y \) is national output, \( X \) is export, \( gt \) is the growth rate of export while \( m \) is the marginal propensity to import.
A change in Y overt time that is \( \frac{dy}{dt} \) which is economic growth (y) can be expressed as follows according to Findlay (1984):

\[
\frac{dy}{dt} = \alpha [Xe^{gt} - mY]
\]

(3)

This can be re-written using y as the growth rate as follows:

\[
y = \alpha [Xe^{gt} - mY]
\]

(4)

Equation 4 shows that economic growth is a function of the growth of the net income from abroad.

However, non-oil producing countries in Africa spend a huge amount of money on the importation of oil and this affects their net income from abroad greatly. Oil import alone constitutes a very high percentage of their foreign exchange transactions, meaning that a substantial aspect of their foreign exchange earnings is spent on oil importation. Consequently, import in the non-oil producing economies in Africa is majorly divided into oil imports (oilM) and non-oil imports (NoilM) (Chuku, Akpan, Sam, & Effiong, 2011), such that

\[
M = (oilM, NoilM)
\]

(5)

Equation 5 can be substituted in equation 3 to become:

\[
y = \alpha [Xe^{gt} - (oilX, NoilX)Y]
\]

(6)

According to (Mesagan, Unar, Idowu, & Alamu, 2019; Salehi-Isfahani, 1989), since oil import is a major aspect of their foreign exchange transactions that affect their net foreign exchange earnings and our interest in this study, the model expressed in equation 5 is re-written as follows:

\[
y = \alpha [Xe^{gt} - oilY]
\]

(7)

Equation 7 is an indication that the output growth rate of the non-oil producing countries in Africa can be expressed as a function of oil import which is ultimately determined by oil price (oilp) (KILISHI, 2010; Mesagan et al., 2019). Consequently we re-specified the model such that:

\[
y = \alpha [oilp, \delta]
\]

(8)

Where y is the economic growth, oilp is the oil price and \( \delta \) represents other shift factors of economic growth which may include macroeconomic variables as well as propensity to import). It should be noted that by default according to the neoclassical growth model, production function with one variable input necessitate the inclusion
of capital $k$ in the model (Baldwin & Forslid, 2000; Solow, 1999, 2005). Consequently equation 7 becomes:

$$ y = \alpha[k, olip, \delta] $$

(9)

Where $k$ is the capital input in production.

Considering the shift factor variable $\delta$, this study, apart from the GDP growth rate which is the dependent variable, includes exchange rate, monetary policy variables (Interest rate and money supply) and inflation rate as major macroeconomic variables which are very important to Nigerian economic performance as an oil dependent country (Iwayemi & Fowowe, 2011). According to (Udeaja & Isah, 2019), inflation and exchange rate are very key macroeconomic variables in any oil import dependent economy because they play major roles in the determination of the macroeconomic stability of the economy while monetary policy variables are relevant because it is the focus of this study. On this note equation 9 is expanded further and stated more explicitly to accommodate these two macroeconomic variables

$$ y = \alpha[k, olip, Mp, exr, inf] $$

(10)

Where $exr$, $Mp$ and $inf$ are exchange rate, monetary policy variables and inflation rate respectively. All other variables are as defined before.

When the model is linearized it becomes;

$$ y = \alpha_0 + \alpha_1 k + \alpha_2 olip + \alpha_3 Mp + \alpha_4 exr + \alpha_5 inf + \mu_t $$

(11)

All variables in equation 11 are as defined above. Their description and sources are included in the following section.

**Model Specification**

Following equations 11 our model is expressed thus

$$ G_{i,t} = \sigma_0 + \sigma_j \sum_{j=2}^{7} \sigma_j K_{i,t} \sigma_j M_{pi,t} + \sigma_j OIL_{p,i,t} + \mu_{i,t} $$

(12)

Where $G_{i,t}$ is the growth rate of output of country $i$ at time $t$, $M_{pi,t}$ comprises of the monetary policy instruments; real money balance measured by real money supply and real interest rate. It also comprises of policy variables such as real exchange rate, and inflation rate in country $i$ at time $t$, while $K_{i,t}$ is the capital of country $i$ at time $t$ $OIL_{p,i,t}$ is crude oil price at time $t$ and $\mu_{i,t}$ represents the country specific stochastic variable. However, since the study is more interested in oil price movement, oil price volatility is developed via GARCH process and it is used to replace the oil price in the model as shown in equation 13,
Equation 13 will be estimated using Panel ARDL model. The method of analysis is described as follows:

**Panel ARDL approach to cointegration**

It had been argued that the long-run relationships exist only in the context of cointegration among integrated variables (Johansen 1995; Philips and Hansen 1990). However, Pesaran and Smith (1995), who introduced the mean group, and Pesaran, Shin and Smith (1999), who introduced the pooled mean group, provided a new technique that has made it possible to derive consistent and efficient estimates of the parameters in a long-run relationship between both integrated and stationary variables in a panel data structure. These two concepts are discussed in turn as follows:

1). The Pooled Mean Group (PMG) is defined as the average of unrestricted single country coefficients and it is a good alternative to the other estimators for the panel like Dynamic OLS and FMOLS (Shin 1998). The main characteristic of PMG is that it allows the short-run coefficients, including the intercepts, the speed of adjustment to the long-run equilibrium values and error variances to be heterogeneous within countries, while the long-run slope coefficients are homogeneous across countries. This is particularly useful when there are reasons to expect that the long-run equilibrium relationship between the variables is similar across countries or, at least, a sub-set of them. The short-run adjustment is allowed to be country-specific. However, there are several requirements for the validity, consistency and efficiency of this methodology.

First, the existence of a long-run relationship among the variables of interest requires the coefficient on the error-correction term to be negative and not lower than -2. Second, one important assumption for the consistency of the ARDL model is that the resulting residuals of the error-correction model be serially uncorrelated and the explanatory variables be treated as exogenous. Such conditions can be fulfilled by including the ARDL (p, q) lags for the dependent (p) and independent variables (q) in error correction form. Third, the relative size of T and N is crucial: both of them should be large to use the dynamic panel technique to avoid the bias in the average estimators and resolve the issue of heterogeneity. Therefore, failing to fulfil these conditions will produce inconsistent estimation in PMG.

2). The second technique **Mean Group (MG)** introduced by Pesaran and Smith (1995) calls for estimating separate regressions for each country and calculating the
coefficients as unweighted means of the estimated coefficients. This does not impose any restrictions. It allows for all coefficients to vary and be heterogeneous in the long run and short run. However, the necessary condition for the consistency and validity of this approach is to have a sufficiently large time-series dimension of the data. The cross-country dimension should also be large (at least 20–30 countries). In addition, for small N, the MG estimator is sensitive to outliers and small model permutations (Favara, 2003).

3. Empirical Results

The results are presented, interpreted and discussed under this section of the paper and, based on the outcomes, inferences are made.

Results of the Panel Unit Root Tests

This aspect looks into the time series properties of the variables in order to understand the individual nature of the variables and also to affirm their suitability for the estimation techniques adopted for this study. This is done by testing the stationarity of the variables which is also known as the unit root test. It is very important to determine the order of integration before embarking on the panel cointegration test. This is as a result of the fact that a non-stationary series contains unit roots and such series has the tendency of sustaining shocks. This is quite different in the case for a stationary series, that is, a series that does not contain unit roots. It is equally important that all the series are integrated of the same order before proceeding to the error correction based panel cointegration. Therefore, in order to perform the unit root test and determine the order of integration of all variables, this study employs the Im, Pesaran and Shin (IPS) unit root test as follows:

**Table 1**

<table>
<thead>
<tr>
<th>Variables</th>
<th>t-statistics</th>
<th>p-value</th>
<th>Order of integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDPgr</td>
<td>-5.6711</td>
<td>0.0000 ***</td>
<td>I (1)</td>
</tr>
<tr>
<td>EXR</td>
<td>-4.1826</td>
<td>0.0000 ***</td>
<td>I (1)</td>
</tr>
<tr>
<td>FFR</td>
<td>-3.1844</td>
<td>0.0000 ***</td>
<td>I (0)</td>
</tr>
<tr>
<td>GCF</td>
<td>-3.1953</td>
<td>0.0000 ***</td>
<td>I (1)</td>
</tr>
<tr>
<td>INFR</td>
<td>-4.5257</td>
<td>0.0000 ***</td>
<td>I (1)</td>
</tr>
<tr>
<td>INTR</td>
<td>-4.4707</td>
<td>0.0000 ***</td>
<td>I (1)</td>
</tr>
<tr>
<td>MSGR</td>
<td>-4.9656</td>
<td>0.0000 ***</td>
<td>I (1)</td>
</tr>
<tr>
<td>WOPvol</td>
<td>-3.2537</td>
<td>0.0000 ***</td>
<td>I (0)</td>
</tr>
</tbody>
</table>

(*** ) represents statistical significance at 1%. Each model includes trend and constant term.

**Source:** Authors’ computation.

189
The results in table 1 above showed that some of the series are stationary at levels while some are stationary after the first difference. For instance FFR and WOP vol are stationary at levels while the remaining variables in the model are stationary after the first difference. These results have set a tone for the application of Panel-ARDL.

**Panel Cointegration test**

The Pedroni panel cointegration test is conducted to investigate the existence of cointegration among the variable before the panel estimation. The results are presented as follows:

*Table 2*

**Pedroni residual cointegration test**

<table>
<thead>
<tr>
<th>Trend assumption: Deterministic intercept and trend</th>
<th>Weighted</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alternative hypothesis: common AR coefs. (within-dimension)</strong></td>
<td></td>
</tr>
<tr>
<td>Statistic</td>
<td>Prob.</td>
</tr>
<tr>
<td>Panel v-Statistic</td>
<td>-4.409747</td>
</tr>
<tr>
<td>Panel rho-Statistic</td>
<td>2.223432</td>
</tr>
<tr>
<td>Panel PP-Statistic</td>
<td>-10.28970</td>
</tr>
<tr>
<td>Panel ADF-Statistic</td>
<td>-3.109016</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Alternative hypothesis: individual AR coefs. (between-dimension)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistic</td>
</tr>
<tr>
<td>Group rho-Statistic</td>
</tr>
<tr>
<td>Group PP-Statistic</td>
</tr>
<tr>
<td>Group ADF-Statistic</td>
</tr>
</tbody>
</table>

*Source: Authors' computation.*

Results in table three have shown that out of all the 11 panel and group cointegartion tests, the null hypothesis of no cointegration is rejected in 8. This is an indication that there exists cointegration among the variables included in the panel model. The next effort is to estimate the Panel ARDL model. Both the long and short run results are presented in tables 4 and 5.
Table 3

Long-run Panel ARDL Model

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXR</td>
<td>0.22622</td>
<td>0.3614184</td>
<td>0.535</td>
</tr>
<tr>
<td>FFR</td>
<td>-0.076696</td>
<td>0.3158904</td>
<td>0.809</td>
</tr>
<tr>
<td>GCF</td>
<td>0.0218524</td>
<td>0.0760735</td>
<td>0.774</td>
</tr>
<tr>
<td>INFR</td>
<td>0.1697015</td>
<td>0.1164747</td>
<td>0.148</td>
</tr>
<tr>
<td>INTR</td>
<td>-0.2897462</td>
<td>0.11163</td>
<td>0.011</td>
</tr>
<tr>
<td>MSGR</td>
<td>0.0828275</td>
<td>0.0375509</td>
<td>0.029</td>
</tr>
<tr>
<td>WOPvol</td>
<td>-0.068891</td>
<td>0.172832</td>
<td>0.691</td>
</tr>
</tbody>
</table>

Table 3

Short-run Panel ARDL Model

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGDPGR</td>
<td>-0.007772</td>
<td>0.063570</td>
<td>0.000</td>
</tr>
<tr>
<td>DEXR</td>
<td>-0.3691257</td>
<td>0.5396225</td>
<td>0.495</td>
</tr>
<tr>
<td>DFFR</td>
<td>-0.6688541</td>
<td>0.356611</td>
<td>0.036</td>
</tr>
<tr>
<td>DGCF</td>
<td>0.1908208</td>
<td>0.0849789</td>
<td>0.027</td>
</tr>
<tr>
<td>DINFR</td>
<td>-0.1218408</td>
<td>0.888362</td>
<td>0.017</td>
</tr>
<tr>
<td>DINTR</td>
<td>-0.993143</td>
<td>0.632204</td>
<td>0.019</td>
</tr>
<tr>
<td>DMSGR</td>
<td>0.342926</td>
<td>0.247652</td>
<td>0.069</td>
</tr>
<tr>
<td>DWOPvol</td>
<td>-0.999722</td>
<td>0.342861</td>
<td>0.004</td>
</tr>
<tr>
<td>COINTEQ01</td>
<td>-1.024997</td>
<td>0.018</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Source: Authors' computation.

The results are in two segments, that is, the long and short-run relationships. The first segment exhibited the variables in their non-differenced forms and this indicated long-run relationship, while the second segment showed the variables in their differenced forms showing the short-run relationships. With respect to the long-run model segment, the empirical results therein indicated that just INTR and MSGR out of all the macroeconomic variables examined have significant long-run relationship with the output growth (GDPgr) in the selected non-oil producing countries in Africa during the period under review. The results equally revealed that other variables such as EXR, FFR, GCF, INFR and WOP do not have significant impacts on output.
growth (GDPgr). However, this is quite different in the case of the short-run model segment in which the results showed that FFR, GCF, INFR, INTR, MSGR and WOP now have significant impacts on output growth (GDPgr). Only EXR does not have significant impact on output growth. The results also revealed that FFR, INFR, INTR and WOP exhibited negative and significant impact on output growth (GDPgr) while GCF and MSGR have positive and significant impact on output growth (GDPgr) while GCF and MSGR have positive and significant impact on output growth (GDPgr). This is a strong indication that macroeconomic variables appear to have more significant influence on output growth in the short-run than in the long-run in the selected non-oil producing countries during the period under review.

The overall R-square value of 82% in these results implies that the model in this study satisfied the requirement for goodness of fit. The computed statistics exhibited that 82% of the total variation in output growth (GDPgr) is accounted for by all the macroeconomic variables examined in this study while 18% of the changes in output growth (GDPgr) are attached to the influence of other factors not included in the regression equation. The Fixed Effect estimated model is also statistically significant judging by the F-statistics p-value of 0.00021 which is less than 1%. This is an indication that the macroeconomic variables may jointly have a significant impact on output growth (GDPgr) in the selected non-oil producing countries in Africa during the period under review.

4. Discussions of Results

Findings from the study revealed that there is a long-run relationship between output growth, oil price volatility and some selected macroeconomic variables including monetary policy variables INTR and MSGR which are monetary policy instruments have significant long-run relationship with the output growth; while the short run model segment showed that all the macroeconomic variables (FFR, GCF, INFR, INTR, MSGR and WOP) except EXR have significant impacts on output growth in the selected non-oil producing countries in Africa during the period under review.

The implication of this finding is that both oil price volatility and monetary policy predict output growth more in the short-run than in the long-run. The possible reason behind this finding might not be unconnected with the nature of the emerging economies in Africa particularly the non-oil producing countries in Africa as their economies are not fully efficient and therefore do not incorporate all the given information to allow long-term co-movement between monetary policy, oil price volatility and output growth. This finding corroborates the report of Al-Fayoumi.

(2009) who confirmed that the lack of long-run relationship between macroeconomic variables and output growth might be linked to the inability of the non-oil producing economies to fully capture all information relevant to the variation in the macroeconomic variables.

Oil price volatility has been shown to have more of a transitory effect on economic growth and the effect is negative. The implication is that oil price uncertainty portends danger for the economies of Africa's non-oil producing countries, but the effect might not go beyond the short run period.

Moreover, the results showed that domestic interest rate has negative and significant impact on output growth in non-oil producing countries in Africa. The implication of this finding is that when interest rate which is the cost of borrowing is high, it will lead to disincentive in borrowing; which will eventually discourage investment and thus a declining output growth rate. This finding aligns with the work of Irfan and Ume (2011) and Hameed Gul et al. (2012).

Also, the results of both long-run and short-run model segment of the Panel ARDL regression revealed that Money supply growth rate (MSGR) exerted positive and significant impacts on output growth in non-oil producing countries in Africa. This finding conforms with the economic theory stating that money supply is an increasing function of economic growth, which means that as money supply increases, output growth also increases. This finding also agrees with the works of Ahmad and Suleiman (2011) and Mishra (2012) who posited in their research works that expansionary monetary policy through increase in money supply is a declining function of interest rate which eventually triggers investment and leads to output growth increment.

Although the findings run contrary to the findings of Omolade and Ngalawa (2014), who concluded that the increase in money supply is not the best during the positive oil price volatility in an oil producing economy like Nigeria, due to the inflation tendency of such expansionary monetary policy. According to them, a positive oil price movement, that is, a sudden increase in price of oil will improve oil revenue to an oil producing country, which means more money to spend. Therefore, increasing money supply again will further compound the inflation problem of such an economy. It should be noted that this study made use of non-oil producing economies in Africa as the case study hence, positive oil price movement will have an opposite effect on their economies by reducing their revenue since they have to pay more for importation of oil therefore reducing their domestic expenditure capacity.

In addition, the results also show that Gross Capital Formation (GCF) has positive and significant impact on output growth in non-oil producing countries in
Africa. This particular finding indicates that there can be no significant output growth without investments in fixed and productive capital. This finding also corroborates the assertions of Adjasi and Biekpe (2009) and Gutierrez (2005) who posited that [with] private capital increases in productive areas, output growth will equally be increased.

5. Conclusions and Recommendations

Findings from the study have again brought to the fore the debate on the super-neutrality of money as the result brought about a conclusion that money supply and interest rate together with other macroeconomic variables have more of a short-run effect on output than long-run effect. Hence it supports the school of thought which argued for the existence of super-neutrality of money.

Another important conclusion from the study is the fact that oil price volatility has been shown to have more of a transitory effect than permanent effect. It further indicates that incessant boom and bursts in the oil market usually have short-term effect on the output of Non-oil producing countries’ economies. This might not be unconnected with the frequency in the changes which will not allow the output to adjust before another change comes up.

The study also concludes that reduction in the cost of borrowing and increase in money supply can jointly stimulate output in non-oil producing countries. The implication is that expansionary monetary policy is a potent policy that can improve the domestic output even in the face of oil price volatility.

It is recommended that expansionary monetary policy that will boost domestic investment is necessary for economic growth during the period of oil price volatility. This is pertinent because an upward movement in oil price will reduce investment expenditure therefore expansionary monetary policy expectedly is required to stimulate investment in such an economy during this period.

The limitation of the study lies in the period covered which starts from 1983 and ends in 2018. This is because of the data availability on the variables of interest in the study.

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FINANCIAL BOOTSTRAPPING AND SMALL BUSINESS GROWTH
IN LAGOS METROPOlis, NIGERIA

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Abstract

This study sought to examine the effect of financial bootstrapping on small business growth in Lagos metropolis, Nigeria. The study adopted a survey research design and the primary data was sourced through structured questionnaire. Simple random sampling was used to obtain a sample of 207 small business owners in Lagos metropolis. However out of the 207 copies of the questionnaire administered, only 149 copies were duly filled and returned which shows a response rate of 71.98%. Descriptive statistics and regression analysis were adopted as the statistical analysis techniques. The results revealed that owners related finance is not statistically significant to small business growth because the half of Beta value is less than standard error value ($\beta/2 < \text{Standard Error}$) and the p-value (0.299) is higher than the significant level of 0.05%. The joint utilization of resources has no statistical effect and insignificant effect on small scale business growth as the half of beta is less than the value of standard error ($\beta/2 < \text{Standard Error}$; P-value $> .05%$ confident level). It is also revealed that delay payment has a negative and insignificant effect on the growth of small businesses in Lagos metropolis ($\beta= -.012; \ P\text{-value}= .855$). The overall results indicate that financial bootstrapping does not have significant effect on small business growth in Lagos metropolis. The study recommends that government should formulate policies to encourage financial institutions to offer credit facilities for small business owners which will enable them to complement their financial bootstrapping strategies.

Key words:
Owners’ related finance, joint utilization of resources, delay payment, small business growth.

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1. Introduction

The importance of small scale business in a developing economy as Nigeria cannot be over-emphasized. The nature of small scale businesses, especially the small capital requirements, makes them easier to be established than the medium and large scale businesses (Ndege 2016). They are also a catalyst for economic growth by creating jobs and improving the standard of living (Eniola & Ektebang, 2014; Ayodeji, 2018; Okon & Edet 2016; and Obasan, 2014). The growth of the small businesses should therefore be of major concern for all stakeholders.

Every organization irrespective of size has growth as a core objective but the capacity and size of small businesses adversely affect this objective (Duru, Ehidiamhen & Chijioke, 2018). In the view of Brush Ceru and Blackburn (2009), some small businesses are struggling for survival, which makes their growth to be difficult while others are exiting the same survival phase, which retards their growth. Growth reduces the likelihood of small businesses being closed down but when such businesses are struggling for mere survival, the needed growth cannot be achieved (Machado, 2016; Rauch & Rijskik, 2013).

A small business cannot grow without funds to procure machineries, acquire modern technology, and employ and retain employees and that is why Bemaa and Daniyan (2017), and Olekamma and Chinoso (2016) see finance as the major impediment to the growth of small businesses. It is thus essential for small business owners to seek alternative ways of financing their business activities and, Winborg and Landström (2001) identify financial bootstrapping (FB) as one of the effective strategies for financing small business enterprises. FB is a creative way to finance small businesses when there are no internal or external sources of financing (Winborg, 2008), when they want to avoid external financing (Fatoki, 2014) or when they want to diversify their finances without recourse to debt (Schofield, 2015). That is why Fatoki (2014) posits that FB is very important as it can create a way for the survival of small business.

Growth is a core objective of every business, including small businesses and adequate capital is required to actualize this universal objective. Hofferbeth (2017); Olekamma and Chinoso (2016); Schofield (2015) note that lack of financial resources is among the challenges facing the small business in Nigeria and the globe at large, which has hindered survival and growth. The criteria to obtain financial assistance from the financial institutions are too stringent for the small business owners to meet. According to Olekamma and Chinoso (2016), deposit money banks prefer to lend money to medium and large scale businesses while the support of Microfinance banks
is not adequate to facilitate the growth of small businesses. The small businesses owners are thus left with no option than to find alternative funding vehicles to finance their growth. One key means employed by small business owners is FB but this notwithstanding; there is still a high rate of growth retardation or sluggish growth among the small businesses. Ayodeji (2018) pointed out that 80% of small businesses in Nigeria do not grow because they are struggling to survive especially during first-five years of their existence. Yunusa and Paul (2018) observed that small businesses find it difficult to grow in Nigeria even after the teething periods while Afolabi, Odebunmi and Ayo-Oyebiyi (2018) believe this situation is caused by lack of liquidity to meet their operational requirements. There is scanty evidence that FB has been brought into the equation and in particular, as it relates to Lagos state.

Based on this background, this study wants to examine financial bootstrapping and small business growth in Lagos metropolis. The general objective of this study is to examine the effect of financial bootstrapping on small business growth in Lagos metropolis, Nigeria. Also to discuss the extent to which owner related finance influences small business growth, determines the effect of joint utilization of resources on small businesses growth and to ascertain the extent to which delayed payments influence the growth of small businesses.

2. Literature Review

2.1. Small Business Growth

The definition of a small business varies depending on who is defining and the period of the definition. A small scale business is an enterprise with capital employed of between N10 million to N49, excluding cost of land and staff strength of 5-50 employees (Small and Medium, Enterprises Development Agency 2015). Growth is a positive change in size over a definite period (Machodo, 2016) and for small businesses, this results from improvements in their internal processes(Penrose, 2006), which in turn leads to meaningful increments in the quantity and quality of goods and services that the enterprise produces or offers to the customers or clients (Machodo, 2016; Janssen ,2009).Brush, Ceru and Blackburn (2009) identify other elements of small business growth to include, rise in the number of outlets, operating in new markets, and rise in the number of products and services.

Janssen (2009) opines that the first sign of a small business growth is increase in sales as well as increase in the capital invested in more factors of productions to meet the additional demands of its goods or services. Okafor, Onifade and Ogbechi (2018) list other indicators of growth as increase in sales, profit, assets, improvement in

200
internal processes and increased staff strength while Machado (2016) includes diversification into new markets. The growth may be classified as absolute (increase in employment and sales), fast or robust (increase in sales), slow, regular and irregular (Machado, 2016; Brush, Ceru, & Blackburn, 2009).

2.2. Financial Bootstrapping

FB is a creative technique used in obtaining resources at reduced cost and optimize the utilization of the resources (Bemaa & Daniyan, 2017), a resource dependence management strategy (Fatoki, 2014) and an inexpensive method of ensuring positive cash flow of a business. It reduces the quantum of debts as well as the resulting interest charges and by minimizing the amount of finance a business enterprise raises through financial markets, it allows the business to access resources owned by others at little or no cost (Ebben & Johnson, 2006; Winborg & Landström, 2001). In the view of Fatoki (2014), Tomory, (2011), financial bootstrapping is the range of innovative means of acquiring funds without raising equity or borrowing money from traditional sources.

Bonginkosi and Celani (2016) see FB as the use of highly creative ways for meeting resource needs without relying on long-term external finance from debt holders and/or new owners. According to Schofield (2015), it is the creative method of getting capital that does not solely follow the conventional methods of external sources of financing. Bootstrapping is the employment of a variety of techniques to finance a business enterprise, with emphasis on internal financing techniques, with minimal amounts of debt and equity financing, or from nontraditional sources (Osei-Assibey, Bokpin&Twerefou, 2012). Bemaa and Daniyan (2017) expressed that FB methods motivate small business owners to make use of private savings, seek funds from relatives, exchange for equipment, obtain funding from quasi equity sources with flexible loan refund plans. Thus, FB is the creative technique employed by small business owners to generate funds without depending mainly on the traditional sources of finance.

According to Fatoki (2014), FB offers small business owners a source of capital to improve and strengthen the business cash flow and is seen a means to an end when other traditional sources do not exist. Cassar (2004) posits that FB has been known as an outside debt and equity financing method for small businesses especially when financial assistance is too difficult to obtain from the financial institutions. Thus, Schofield (2015) opines that the use of FB helps the business to moderate dependence on long term external finance.
Researchers have identified different strategies of FB for businesses. Bemaa and Daniyan (2017); Bonginkosi and Celani (2016); Schofield (2015); Vanacker, Manigart and Meuleman (2012) identify use of owner-related finance, borrowing of resources, sharing of resources, delaying payments, minimization of capital invested and subsidy finance as methods of financial bootstrapping. Winborg and Landstrom (2001) identify six FB strategies which are delaying bootstrapping, relationship-oriented bootstrapping, subsidy-oriented bootstrapping, minimizing bootstrapping, non-bootstrapping, and private owner-financed bootstrapping. Munyanyi (2015); Fatoki (2014); Schinck and Sarkar (2012) also identify four FB methods, which are acquisition of subsidies and investors, internal management process, delaying cost, and minimizing investment. Based on this, the study sees FB adopts these three FB strategies owner-related finance, joint utilization of resources and delaying payments.

2.3. Owners Related Finance and Small Business Growth

Owner-related finance involves the use of business owners’ funds and that of his or her family or friends (Vanacker et al. 2012). In the view of Bonginkosi and Celani (2016), owners’-related bootstrapping is referred to the direct and/or indirect supply of resources from the business owner. Owners’-related finance is the technique employed by the small business owners or managers from the owners’ financial resources. It entails using owners’ resources to finance the business. Therefore, owners’-related finance is the method that a business owner fashions out from his own personal resources to finance the operations of his business. According to Vanacker et al. (2012), this method of FB affects the business owners’ personal resources. It does not depend on resources that are not owned by the business owners. Owners’ related financing could be that the business owners have another assignment with other businesses, relative or friends in order to raise funds to finance the business (Winborg & Landstrom, 2001). The business owner may have a relative working for him with no agreed financial reward. Schofield (2015) stated that the use of private credit cards of the business owner (as it is easier to obtain loan from the credit card than through the financial institutions) and loan obtained for personal use diverted to the business operation are among the techniques for owners’ related finance. A small business owner can decide not to take from the profit of the business in order to inject liquidity into his business. Bonginkosi and Celani (2016) posit that small business owners can also employ students or recent graduates in order to reduce the high cost on salaries and wages that professionals will demand.

All these techniques of owners’-related FB are meant to reduce costs. Bemaa and Daniyan (2017) recommend that small business owners in Benin City should be
skillful in employing FB as owner related finance helps the business owners to be prudent in their spending. Afolabi (2016) reveals that owner-related finance cannot solely make small and medium scale business to grow especially in an environment that is too dynamic. Ayodeji (2018) opine that business owners must be flexible in employing owner-related FB in order for the technique to reflect in the business activities. The findings of Fatoki (2014) show that owner-related finance influences micro enterprise in South Africa.

Bonginkosi and Celani (2016) used descriptive statistics to ascertain the adoption of FB by SMEs in South Africa and found that the SMEs use especially owner-related financing unknowingly. The outcomes of various studies show that owner related financing is important in running a business venture. It is important to know if owners’ related finance can lead to business growth. Thus, this study hypothesized that owners-related finance does not have significant effect on small business growth in Lagos metropolis.

2.4. Joint Utilisation of Resources and Small Business Growth

Joint utilization is one of the FB techniques. It is the method of having access to resources through sharing (Bonginkosi & Celani, 2016). Joint-utilisation of resources involves actions such as sharing of staff, premises, equipment or machineries, or joint purchases (Lam, 2010). Small scale business owners’ share resources with other parties which can be other business ventures or individuals to save costs that can be used later for the running of the business.

Winborg and Landstrom (2001) state that the purpose of joint utilization is to reduce rental charge, maintenance cost among others and that sharing spaces is more financially beneficiary to small businesses because it leads to significant savings (Bonginkosi & Celani, 2016). Winborg and Landstrom (2001) also suggest that small businesses can use machineries or equipment of other firms or friends and employees at minimal cost.

Bonginkosi and Celani, (2016) is of the view that when a small business uses resources with another party(ies), the owners of the resources may display non-challant attitude towards investing in or maintaining the resources. Joint-utilization FB enhances the independence of a small business. Studies indicate that joint utilization is the most popular FB method adopted by micro enterprises in South Africa (Fatoki2014); that it is not among the techniques of FB bootstrapping employed by South African small scale business (Bonginkosi & Celani, 2016); that it is not popular among Zimbabwean rural entrepreneurs (Munyanyi ,2015) and that it contributes to the success of small businesses in New Hampshire. (Schonfield2015).
All these studies are conducted in different environments. It is necessary to carry-out similar studies in Lagos, Nigeria. Thus, this study hypothesizes that joint utilization of resources does not have significant effect on growth of small scale businesses in Lagos metropolis.

2.5. Delaying Payments and Small Business Growth

Delaying payments method of FB refers to the deferment of bills-payments to a future time than initially agreed through negotiation with suppliers and lenders (Schofield, 2015). Deferment of such bills like VAT, salaries, wages and rent enhances cash flow (Bonginkosi and Celani, 2016) and gives the small business owners the opportunity to use their limited resources to finance other business activities. Despite the benefits of this FB technique, it may give the impression that the business is delaying payments due to financial incapacitation and this may negatively affect the patronage of the business. It thus affects small businesses negatively (Ebben & Johnson, 2006).

Bonginkosi and Celani (2016), and Fatoki (2014) opine that delaying payments is common among small scale businesses in South Africa while Munyanyi (2015) did not find positive influence of delaying payment on rural entrepreneurs in Zimbabwe though Schofield (2015) found mixed reactions to this FB method among small business owners in New Hampshire. Afolabi et al. (2018) on the other hand find that delaying payments influences small business performance in Osogbo. The results are thus mixed as it relates to small businesses in different environments. Thus, this study hypothesizes that delaying payment has no significant effect on small business growth in Lagos metropolis.

2.6. Pecking Order Theory

Pecking Order Theory was introduced by Donaldson in 1961. Stewart Meyer in 1984 developed the pecking order theory of small business finance. The pecking order theory suggests that firms have a particular preference order for capital to be used to finance the businesses (Myers & Majluf, 1984). This theory states that companies prioritize their sources of financing from internal financing to equity according to the cost of financing, preferring to raise equity as a financing means of last resort. According to Abosede (2012), pecking order theory describes how businesses select and utilize internal sources of finances for the business before going for external sources. Thus, internal funds are used first, followed by debts, and when it is no longer viable to issue any more debt, equity is issued (Schonfield, 2015; Minola & Cassia, 2013; Atherton, 2012).
Pecking order theory is relevant to small business finance, as it explains the preference in the sources of funding by small business owners (Atherton, 2012). The theory further states that when external source of financing is used, debt financing is preferred to equity finance. Small business are not able to obtain financial aid from external sources due to the processes involved (Osei-Assibey, Bokpin, & Twerefou, 2012) and thus small businesses focus on and utilize internal means of financing before using external sources of financing.

3. Methodology

This study relied on survey research design. The study was carried out in Lagos State, Nigeria. Lagos State was chosen because the state has the highest number of small scale businesses in Nigeria (Uchegbulam, Akinyele & Ayodotun 2015; Dauda, Akingbade & Akinlabi, 2010). The total number of small scale businesses registered with Nigerian Association of Small and Medium Enterprises (NASME) in Lagos State is the population of this study. The number of small businesses registered with NASME is 432 (NASME Registered Book, 2017). Lagos chapter of NASME was contacted to assist the researcher to contact their members in filling the questionnaire. And this was done during the monthly meeting of the association. Simple random sampling method was chosen and primary data was utilized to achieve the objectives of the study and questionnaire was the research instrument used. The study employed the Raosoft published table for sample size determination and 207 was found to be the sample size that matches the population of the study. Israel (1992) listed published table as one of the methods of determining sample size in social and management sciences research.

The study administered 207 copies of the structured questionnaire to the small business owners registered with NASME in Lagos State. The measurement scale of Bonginkosi and Celani (2016); Schofield (2015) on financial bootstrapping was adopted while measurement scale on growth was self-developed. The total number of items in the questionnaire is 24. Each variable carries 6 items. The responses of the respondents in the questionnaires were ranked on 6-point scale of Strongly Agree; Agree; Fairly Agree; Fairly Disagree; Disagree; and Strongly Disagree. Cronbach Alpha and KMO tests were employed to check the reliability and validity of the data. Descriptive statistics and regression analysis were employed as statistical tool to analysis the data obtained from the respondents.
Reliability and Validity Tests

Table 1

Reliability and Validity Test of the Data

<table>
<thead>
<tr>
<th>Variables</th>
<th>Reliability Test</th>
<th>Item</th>
<th>Validity Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owners’ Related Finance</td>
<td>.784</td>
<td>6</td>
<td>.708</td>
</tr>
<tr>
<td>Joint Utilization of Resources</td>
<td>.715</td>
<td>6</td>
<td>.749</td>
</tr>
<tr>
<td>Delay Payment</td>
<td>.740</td>
<td>6</td>
<td>.756</td>
</tr>
<tr>
<td>Small Business Growth</td>
<td>.743</td>
<td>6</td>
<td>.792</td>
</tr>
</tbody>
</table>


Table 2 showed the reliability and the validity of the data collected from the respondents. The reliability test was conducted via Cronbach Alpha and the Kaiser-Meyer Olkin (KMO) was used to ascertain the validity of the data. The results of the test showed that the reliability test for owners’ related finance, joint utilization of resources, delay payment and small business growth were .684, .715, .740 and .743 respectively while the results of the valid test for the variables were .708, .749, .756 and .793 accordingly. Thus, the data were reliable and valid to achieve the objective of the study.

4. Data Analysis and Interpretations

4.1. Descriptive Statistics

Table 2

Bio-Data Details of the Respondents

<table>
<thead>
<tr>
<th>Items</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>108</td>
<td>72.5</td>
</tr>
<tr>
<td>Female</td>
<td>41</td>
<td>27.5</td>
</tr>
<tr>
<td>Total</td>
<td>149</td>
<td>100</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>54</td>
<td>24.8</td>
</tr>
<tr>
<td>Married</td>
<td>88</td>
<td>59.1</td>
</tr>
<tr>
<td>Separated</td>
<td>7</td>
<td>4.7</td>
</tr>
<tr>
<td>Total</td>
<td>149</td>
<td>100</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21-30 years</td>
<td>42</td>
<td>28.2</td>
</tr>
<tr>
<td>31-40 years</td>
<td>56</td>
<td>37.6</td>
</tr>
<tr>
<td>41-50 years</td>
<td>39</td>
<td>26.2</td>
</tr>
<tr>
<td>51 years and above</td>
<td>12</td>
<td>8.1</td>
</tr>
<tr>
<td>Total</td>
<td>149</td>
<td>100</td>
</tr>
</tbody>
</table>
I. Muo, M. S. Oladimeji, O. I. Okunbadejo. Financial Bootstrapping and Small Business Growth in Lagos Metropolis, Nigeria

<table>
<thead>
<tr>
<th>Education</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSCE</td>
<td>11</td>
<td>7.4</td>
</tr>
<tr>
<td>OND/NCE/A’ Level</td>
<td>61</td>
<td>40.9</td>
</tr>
<tr>
<td>HND / B.Sc.</td>
<td>71</td>
<td>47.7</td>
</tr>
<tr>
<td>M.Sc. /M.Ed. /MBA</td>
<td>6</td>
<td>4.0</td>
</tr>
<tr>
<td>Total</td>
<td>149</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Years of Experience</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2 years</td>
<td>18</td>
<td>12.1</td>
</tr>
<tr>
<td>3-5 years</td>
<td>21</td>
<td>14.1</td>
</tr>
<tr>
<td>6- 8 years</td>
<td>37</td>
<td>24.8</td>
</tr>
<tr>
<td>9-11 years</td>
<td>42</td>
<td>28.2</td>
</tr>
<tr>
<td>More than 11 years</td>
<td>31</td>
<td>20.8</td>
</tr>
<tr>
<td>Total</td>
<td>149</td>
<td>100</td>
</tr>
</tbody>
</table>

**Source:** Researcher’s Field Survey, 2018.

Table 1 revealed the bio-data details of the respondents. The table showed that the male respondents were 108(72.5%) while the female respondents were 41(27.5%). 54(24.8%) respondents were single, 88(59.1) were married while 7(4.7%) were separated. 21-30 years of the respondents were 42(28.8%), 31-40 years were 56(37.6%), 39(26.2%) respondents were 41-50 years and 12(8.1%) of the respondents were 51 years and above. 11(7.4%), 61(40.9%), 71(47.7%) and 6(4.0%) had SSCE, OND/NCE/A’ Level, HND/B.Sc. and M.Sc. /M.Ed. /MBA as educational qualifications respectively. 18(12.1%) had been operator of small scale business for 2 years, 21 (14.1%), 37(24.8%), 42 (28.2%) and 31 (20.8%) had been operating small businesses for 3-5 years, 6-8 years, 9-11 years and over 11 years respectively.

**4.2. Test of the Hypotheses**

The results of the hypotheses are shown in the table below

**Results of the Hypotheses**

<table>
<thead>
<tr>
<th></th>
<th>β</th>
<th>Std Error</th>
<th>t-statistic</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Owners’ Related Finance</strong></td>
<td>.068</td>
<td>.065</td>
<td>1.042</td>
<td>.299</td>
</tr>
<tr>
<td>R-Square</td>
<td>.007</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-Statistic</td>
<td>1.086</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Joint Utilization of Resources</strong></td>
<td>.070</td>
<td>.051</td>
<td>1.370</td>
<td>.173</td>
</tr>
<tr>
<td>R-Square</td>
<td>.013</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-Statistic</td>
<td>1.877</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Delay Payment</strong></td>
<td>-.012</td>
<td>.067</td>
<td>-.183</td>
<td>.855</td>
</tr>
<tr>
<td>R-Square</td>
<td>.015</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-Statistic</td>
<td>.034</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dependent Variable:** Small Business Growth

**Researcher’s Computation.** 2018.
Table 3 indicated the results of the three hypotheses formulated to achieve the objectives of this study. Hypothesis one states that owners’ related finance does not have significant effect on small business growth. The results indicated that the coefficient of determination ($R^2$) is 0.007 which means that .007% of the changes in small business growth are caused by owners’ related finance. The results revealed that owners related finance is not statistically significant to small business growth because the half of Beta value is less than standard error value ($\beta/2 < \text{Standard Error}$) and the p-value (-.299) is higher than the significant level of 0.05%. Thus, the hypothesis that owners’ related finance does not have significant effect on small business growth is accepted. This might be because of the relative low per capital income of the inhabitants of Nigeria, which tends to negatively affect their savings. Hence, the owners’ related finance might be too small to warrant any significant business growth.

The result of hypothesis two states that joint utilization of resources does not have significant effect on the growth of small scale businesses. It showed that $R^2$ is 0.013% that is 1.3% of the variations in growth of small scale businesses in Lagos is explained by joint utilization of resources. The table displayed that joint utilization of resources has no statistical effect and insignificant effect on small scale business growth as the half of beta is less than the value of standard error ($\beta/2 < \text{Standard Error}$; P-value > .05% confident level). Therefore, this study accepted the hypothesis that joint utilization of resources does not have significant effect on growth of small scale businesses. This might be as a result of the individualistic tendencies of most Nigerian small business owners, which might affect the full utilization of joint resources. As a result, the enterprises tend not to derive the benefit of joint utilization of resources, which might not propel small business growth.

The results of the hypothesis three-delaying payment has no significant effect on small business growth showed that the R-square which is the coefficient determination is .015% which reveals that delay payment accounted for 1.5% variations in the growth of small business operating in Lagos. It is also revealed that delay payment has a negative and insignificant effect on the growth of small businesses in Lagos metropolis ($\beta = -.012$; P-value = .855). Therefore, the hypothesis that delay payment has no significant effect on growth of small business is accepted.

4.3. Discussion of Findings

Finance has been identified to be an important factor in achieving business objectives. Financial bootstrapping exists as an alternative way of financing and this study confirmed that financial bootstrapping cannot instigate business growth in a city
like Lagos. It was indicated the owners’ related finance cannot make a small business to achieve its objective of growth. Owners’ related finance is not enough to obtain funds that will make the business to achieve growth. And this may well be as results of economic challenges in Nigeria, which make it difficult for small business owners to personally raise needed funds for the business to grow. Similarly, sharing business resources with other businesses is observed to be unhealthy for a small business in Lagos metropolis to achieve growth. The joint use of these resources will result to depletion which will reduce the resources capabilities. The cost of maintaining the shared resources will be high which will affect the cash liquidity of the business. In the same vein, delay payment to supplier, workers among others will not help the business to grow.

The findings show a negative effect which implies that the more payments are delayed in order to have funds or liquid funds to run the business, the lower the growth which the business ought to experience. Here, delay payment will affect the reputation of a business and its owner. Delaying workers’ salaries or wages, payment to suppliers etc will reduce the effectiveness and efficiency of the workers and also, suppliers will be discouraged to continue supplying the business on regular basis. When payments are delayed for a long period, it will be accumulated which might be difficult to settle and this could affect the thinking of small business owners on how to move the business to the next level. Therefore, financial bootstrapping cannot cause business to grow but it could add value to the running or operation and management of the business.

The findings of this study agree with findings and conclusions of previous studies on financial bootstrapping such as Dagogo and Ohaka (2017); Fatoki (2014), Banginkosi and Celani (2016), Munyanyi (2015) Schofield (2015). The hypothesis three of this study agrees with the findings of Vanacker et al (2012) but the other two hypotheses –one and two disagrees with Vanacker et al (2012) findings and that of Afolabi, Odeunmi, & Ayo-Obyejiyi (2018)

5. Conclusion and Recommendations

This study found that owners’ related finance, joint utilization of resources and delay payment had no significant effect on small business growth. Thus, financial bootstrapping does not have significant influence on growth of small scale sector in Lagos metropolis. Based on this, this study recommended that government should formulate policies that will encourage financial institutions to offer credit facilities for small business owners which will assist the small business owners to complement with financial bootstrapping strategies. Payments such as workers' salaries or wages, and payment to suppliers should
not be delayed to improve the effectiveness and efficiency of the workers, and owners’ related finance should be properly managed to achieve its objective of growth. The sharing of business resources with other businesses is observed to be unhealthy for a small business in Lagos metropolis but it should be encouraged as it is the practice in the advanced countries. Also, seminars or workshops should be organized by different associations of business owners such as Nation Association of Small and Medium Enterprises (NASME), Small and Medium, Enterprises development agency (SMEDAN) for small business owners on how to employ financial bootstrapping effectively for businesses to growth. It is also recommended that small business owners should be wary of sharing resources with other business(es) and adopting delayed payments to supplier, as these may yield negative outcomes.

References


I. Muo, M. S. Oladimeji, O. I. Okunbadejo. Financial Bootstrapping and Small Business Growth in Lagos Metropolis, Nigeria


DYNAMIC LINKS BETWEEN FINANCIAL DEVELOPMENT AND CARBON EMISSION IN NIGERIA

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JEL M30, M31, M37

Abstract

The study investigates the dynamic link between financial development and carbon emission in Nigeria from 1971 to 2017 using the Vector Error Correction Model (VECM) approach. The study specifically aims at examining the short-run and long-run impact of financial development on carbon emission and examines the causal linkage between financial development and carbon emission in Nigeria. From the findings, it was revealed that financial development had a positive impact in the short-run and negative impact in the long-run on carbon emission in Nigeria, while Gross Domestic Product (GDP) and Energy consumption had a negative impact in the short-run and positive impact in the long-run on carbon emission. The causality test revealed that jointly, financial development, output and energy consumption causes carbon emission, while no direction of causality was found between financial development and carbon emission in Nigeria. The study therefore concludes that financial development is an important determinant of carbon emission and government should work towards increasing investment financial capacity in the economy.

Key words: CO2, Financial Development, Energy Consumption, GDP, VECM.

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1. Introduction

Over some years in the literature, many researchers have made efforts to investigate the linkages that exist between financial development and carbon emission. This attention is due to the pros and cons in the use of fossil fuel as a source of energy in the developed, developing and less developed economies. The links between financial development and carbon emission is widely documented in recent and past literature, such as Ayeche, Barhoumi, and Hammis 2016; Abdoulaye, Diatlo, and Masih 2017; Shahbaz, Adnan Hye, Tiwari, and Leitao 2013; Corazza 2014; Bekhet, Matar, and Yasmin 2016; Omri, Daly, Rault, and Chaibi 2015. However, the possible relationship that exists between financial development and carbon emission is uncertain as a result of divergence discoveries in the literature review.

Corazza (2014); Bekhet, Matar, and Yasmin (2016); Omri, Daly, Rault, and Chaibi (2015); Sadeghieh (2016); Soheilakhoshnevis, and Bahram (2014); Ali, Law, Yusop, and Lee (2015) have all asserted that there is an existence of positive link between financial development and carbon emission. Based on this assertion, the likely justifying instances on how financial development could result in carbon emission are: Firstly, the desire of a firm to increase its finance for business expansion in the face of high competition in the market will attract more energy consumption which leads to rises in carbon emission. Secondly, actions taken by the financial sector to increase direct foreign investment to encourage economic growth will trigger carbon emission. Thirdly, uses of high technology in homes and industries and automobiles can also lead to carbon emission. Lastly, the improvement of the stock market leading to cost minimization and maximization of profit by the listed company with the desire to expand investment promotes energy consumption and possibly increases carbon emission (Ali et al 2015; Sadorsky 2010; Zhang 2011; and Gokmenoglu et al 2015).

On the other hand, Ayeche, Barhoumi, and Hammis (2016); Abdoulaye, Diatlo, and Masih (2017); Shahbaz, Adnan Hye, Tiwari, and Leitao (2013); Dong (2013) Dritsaki and Dritsaki (2014) Shahbz, Tiwari, and Nasir (2013); Maji, Habibullah, and Yusofsaari (2016) all posited that there is no link between financial development and carbon emission. The reasons for their assertions are: firstly, financial sectors seek to improve the quality of the environment by promoting the uses of environmentally-friendly technologies and machines that leads to less carbon emission. Secondly, financial development promotes the use of renewable source of energy equipment which lessens carbon emission. Thirdly, financial development and trade openness sustain technological innovations by increasing spending on energy conservation.
which results in energy efficiency and lower carbon emission. Lastly, financial
development aids science research on innovation of environmentally-friendly
technologies, lower cost of energy and creation of renewable sources of energy which
leads to lower carbon emission (Dritsaki, Dritsaki (2014); Coraza (2014); Omri, Daly,

The econometric approach of empirical studies is frequently based on Auto
Regressive Distributed Lag (ARDL) bounds (Abdoulaye Diallo & Masih, 2017;
Bekhet, Matar, & Yasmin, 2016; Shahbaz, Adnan Hye, Tiwari, & Leitão, 2013), Co-
integration (Bozkurt & Akan, 2014; Omri, Daly, Rault, & Chaibi, 2015; Al-mulali &
Che Sab, 2012), Granger Causality Test (Soheilakhoshnevis & Bahram, 2014; Hu,
Xie, Fang, & Zhang, 2017), General Linear Model (Ayeche, Barhoumi, & Hammas,
2016), Augmented Dickey-Fuller (Dong 2013; Corazza 2014; Lin, Omoju, &
Okonkwo, 2015), Unit Root (Sadeghieh 2016; Shahbaz, Tiwari, and Nasir 2013;
Ertugrul, Cetin, Seker, & Dogan, 2016).

However, the recognized studies that were carried out within the framework of
They both capture the short-run and long-run relationship impact of financial
development on carbon emission using Auto-regressive distributed lag (ARDL) in
both the sub sector and aggregate sector of Nigerian economy. However, this study
differs from the other literature by focusing on the dynamic links that exists between
financial developments and carbon emission in the aggregate sector of the Nigerian
economy using the VECM Granger causality test.

The rest of the study is divided into four parts. Section two captures the literature
review, section three holds the data source and model specification, section four
handles the analytical framework, while section five contains the conclusion and
recommendations.

2. Literature Review

The theoretical relation of most of the empirical studies on the link between
financial development and carbon emission is showed in various theories that argued
on the influence of financial development on economic growth. Among the theories
are the seminal work of Schumpeter (1911), Goldsmith (1969), McKinnon (1973),
and Shaw (1973) and keep on gaining the attention of many researchers in the
economic theory literature. On the empirical position, in developed, emerging, and
less developed countries, studies such as Corazza (2014) find out that in the
developed countries there is an adverse effect of trade openness and Gross Domestic
Product (GDP) on carbon emission, while financial development and energy
consumption bring about positive impact on carbon emission; whereas trade openness, GDP, financial development and energy consumption have a positive impact on carbon emission in both emerging and developing countries. Taking a sample of 25 developing countries with the highest rank of global carbon emission, Hu, Xie, Fang, and Zhang (2017) identified a long-run equilibrium relationship among energy consumption, economic growth, commercial services, and carbon emission; they also establish that a positive relationship exists between economic growth and carbon emission. Ertugrul, Cetin, Seker, and Dogan (2016) took a sample of top 10 carbon emitters in developing countries. Their findings indicated that there is co-integration between carbon emissions, real income, quadratic income, energy consumption and trade openness for Thailand, Turkey, India, Brazil, China, Indonesia and Korea. They also establish that environmental pollution is aided by energy consumption in most of the analyzed countries, and trade openness results in carbon emission upsurges in Turkey, India, China and Indonesia. Their results also establish the EKC hypothesis in India, China, Turkey and Korea in the long-run. They confirmed a causal link between carbon emissions, real income, quadratic income, energy consumption and trade openness.

Bekhet, Matar, and Yasmin (2016) in Gulf Cooperation Council (GCC) countries, finds existence of a long-term equilibrium relationship among carbon emission and real GDP per capita, energy consumption, and financial development in all GCC countries except UAE. They noted that the causal link between carbon emission and energy consumption is otherwise as carbon emission causes energy consumption in Saudi Arabia, UAE, and Qatar while bidirectional causality was found from Oman and Kuwait. Abdoulaye Diallo, and Masih (2017) while incorporating carbon emission into financial development model in United Arab Emirates (UAE) submitted that a long-run co-movement exists between GDP, FDI, domestic credit provided by financial sector, domestic total credit to private sector, carbon emissions, and oil rents which implies reduction of carbon emission in the long run.

Taking a sample of 40 European countries, Ayeche, Barhoumi, and Hammans (2016) discovered bidirectional relationship between carbon emissions and economic growth, financial development and economic growth, trade openness and economic growth, trade openness and financial development, and carbon emission and trade openness. So also, they argued that the existence of a significant relationship between financial development and carbon emission in European countries is not valid. They also argue that there is a positive link between carbon emission and economic growth, and carbon emission and trade openness. In Brazil, Russia, India and China (BRIC)
countries, Xu (2014) argued that the relationship between environmental degradation and economic growth is not clear, and further on confirmed the establishment of Environmental Kuznets Curve (EKC) which is influenced by income elasticity, economic scale, international trade, market mechanism and environmental regulation.

Omri, Daly, Rault, and Chaibi (2015) used a sample of 12 Middle East and North Africa (MENA) countries to analyse the causal link between carbon emission, financial development, trade, and economic growth in MENA countries. They confirmed a strong bidirectional causality between economic growth and carbon emission and a positive relationship between economic growth and trade openness. There is also unidirectional causality running from financial development to economic growth and from trade openness to carbon emission, and further on confirmed the existence of Environmental Kuznets Curve in MENA countries. In Sub Saharan African countries, Al-mulali, and Che-Sab (2012) discovered a positive shortrun bi-directional relationship between total primary energy consumption and carbon emission, GDP per capita and investment, broad money and carbon emission, broad money and investment, total primary energy consumption and domestic credit to private sector, domestic credit to the private sector and carbon emission, domestic credit to the private sector and investment. So also, there is a one way positive causal relationship from broad money and domestic credit to the private sector to GDP per capita.

In Indonesia, Shahbaz, Adnan Hye, Tiwari, and Leitao (2013) discovered that economic growth influences carbon emission while financial development reduces carbon emission in which there is establishment of an upset U-shape relationship between financial development and carbon emission. Dong (2013) realised that in China, there is a negative sign in the coefficient of financial development measured using bank loans and money supply to GDP. This implies that financial development in China does not lead to environmental pollution. Nasir, and Rehman (2011) discover that in Pakistan, per capita energy consumption and foreign trade contributes to carbon emission in the long run, and none of the variables significantly contributes to carbon emission in the short run. They however, concluded that Environmental Kuznets Curve (EKC) is a long run occurrence while in the short run there is no occurrence of Environmental Kuznets Curve (EKC). Shahbaz, Solarin, Mahmoud, and Arouri (2013) also confirmed in the Malaysian economy that economic growth, energy consumption, and foreign direct investment lead to an increase in carbon emission, whereas financial development lessens carbon emission. Boutabba (2013) argued that in India carbon emission reduction policy will not retard economic growth but it can lead to sustainable economic development in the long run.
In Turkey, Bozkurt, and Akan (2014) revealed that energy use exhibits positive impact on economic growth meanwhile, economic growth is adversely affected by carbon emission. Dritsaki and Dritsaki (2014) in Greece discovered that energy consumption and economic growth are the main promoters of carbon emission and there is no relationship between financial development and carbon emission. In the analysis of linkages between financial development and carbon emission in Turkey, Sadeghieh (2016) noted a long-run equilibrium relationship among the carbon emission, gross domestic product, fossil fuel consumption and financial development. There is also a long-run causal relationship running from financial development, carbon emission to economic growth. Shahbaz, Shahzad, Ahmad, and Alam (2016) submitted that carbon emission is caused by financial development in the banking sector.

In South Africa, Shahbaz, Tiwari, and Nasir (2013) confirmed a long-run relationship between economic growth and carbon emission and an inverse relationship between financial development and carbon emission, arguing that an increase in financial development leads to environmental quality and lessen energy pollutants. There is also an existence of Environmental Kuznets Curve (EKC). In Iran, Soheilakhoshnevis, and Bahram (2014) in the same vein confirmed that a causal direction runs from per capita real income, per capita energy consumption, increase in per capita income, financial development and openness to carbon emission.

In the analysis of the dynamic connection between carbon emission, trade openness, energy consumption, economic growth and financial development in Nigeria, Ali, Law, Yusop, and Lee (2015) using the variable of Domestic credit to private sector, carbon emission, fossil fuel consumption, real GDP per-capita, export and import as a ratio of GDP spanning from 1971-2010 noted that in the long-run, carbon emissions, economic growth and energy consumption have significant positive impact on financial development, whereas trade openness sustains a negative impact. However, in the short-run financial development is significantly affected positively by carbon emission. Disagreeing with the above result, Maji, Habibullah, and Yusof-Saari (2016) discovered a negative relationship between financial development and carbon emission. The disagreement that exists among these studies could be the result of objectives, methodology, scope and data used in each study. This study, however, adds to the existing research findings by evaluating the dynamic links between financial development and carbon emission in Nigeria between the year 1971 and 2015 using the Vector Error Correction Method (VECM).

Sulaimon and Abdul-Rahim (2018) investigated the impact of population growth on CO$_2$ emissions in Nigeria. While their study is recursively based on 3 scenarios
within a time span (1971 to 2010, 1971 to 2005 and 1971 to 2010), they observed that population is not a significant determinant of CO$_2$ emissions in all three periods in the long-run but economic growth was found to be the only long-run CO$_2$ emissions significant determinant for the periods.

Jakada, Mahmood, Ahmad, Farouq and Mustapha (2020) examined the asymmetric effect of financial development on the quality of environment in Nigeria from 1970 to 2018. They employed the techniques of non-linear ARDL approach. Their study revealed that financial development in Nigeria impedes the quality of the environment.

3. Data Source and Methodology

This study used a secondary data which spans from 1971 to 2017. The data are sourced from World Development Indicators (WDI) (2016). The data used include Carbon emission (Ct) per capita, calculated by dividing Carbon emission by the total population. Energy Used (kg oil equivalent per capita) used to capture energy consumption, Domestic credit to private sector by banks per capita. This was arrived at by multiplying domestic credit to private sector by banks as a percentage of GDP by GDP and divided by the total population. GDP per capita was used as a proxy for economic growth. This study followed the model of Nasir and Rehman (2011) which specified energy consumption and economic growth as a function of GDP. The model in its estimable form is presented below as;

$$C_t = f(E_t, Y_t)$$

(1)

Where $C_t$ is carbon emission, $E_t$, is energy consumption, and $Y_t$ is output per capita.

The model was extended by Shahbaz et al (2016) by incorporating financial development into the model, considering it as an important determinant of carbon emission. This we replicate for Nigeria. The model is stated as;

$$C_t = f(F_t, E_t, Y_t)$$

(2)

$C_t$, explained as carbon emission, $E_t$, - energy consumption, $Y_t$ – is output per capita, and $F_t$ as financial development.

We assess all variables in logarithmic transformations. To validate the existence of long-run cointegration relationship among the variables, we used the Johansen system equation. This is because it is permitted for variables that are cointegrated at order of integration one [i.e I(1)]. Also, to estimate the long-run and short-run dynamic effect of financial development on carbon emission, we used the Vector Error Correction model to estimate the parameters. The major merit lies in the fact
that it is justifiable for variables that are cointegrated after their stationary is being confirmed at I(1). The VECM model is specified below as;

\[
\Delta \ln CO_{2t} = \delta_0 + \sum_{i=1}^{\rho} \theta_i \Delta \ln (CO_{2t-i}) + \sum_{j=0}^{\rho} \beta_{1j} \Delta \ln (F_{t-j}) + \sum_{j=0}^{\rho} \beta_{2j} \Delta \ln (E_{t-j}) + \sum_{j=0}^{\rho} \beta_{3j} \Delta \ln (Y_{t-j}) + \gamma ECT_{t-1} + \mu_t
\]

(3)

To capture the dynamic causal link between the variables, we used the VECM Granger causality model. The VECM Granger causality permits variables to be endogenised in a vector. The VECM Granger causality model is specified as;

\[
\Delta X_t = \mu_t + \sum_{i=1}^{\rho-1} \Gamma_i \Delta X_{t-i} + \Pi X_{t-\rho} + \varepsilon_t
\]

(4)

\(X_t\) is a 4x1 vector matrix of the endogenous variables (C, F, E, and Y). C is carbon emission, F is financial development, E is energy consumption, and Y is gross domestic product. \(\Gamma_i \Delta X_{t-i} + \Pi X_{t-\rho}\) is a vector of country specific effects with a lag operator and \(\varepsilon_t\) is a vector of idiosyncratic errors.

4. Analytical Framework

The study first subject the data used to some pre-estimation tests which include Correlation test to avoid multicollinearity problem, descriptive statistics to explain the behaviour of the key variables over the years.

The multicollinearity test revealed that there is a weak negative correlation between financial development (F), energy consumption (E) and gross domestic product (GDP). This implies that the variables are good enough to be included in the model and there is no multicollinearity problem. The result is presented below in Table 1

<table>
<thead>
<tr>
<th>Variables</th>
<th>(\ln E)</th>
<th>(\ln F)</th>
<th>(\ln E)</th>
<th>(\ln Y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\ln C)</td>
<td>1</td>
<td>-0.37693</td>
<td>-0.25563</td>
<td>-0.40822</td>
</tr>
<tr>
<td>(\ln F)</td>
<td>-0.37693</td>
<td>1</td>
<td>0.916574</td>
<td>0.992063</td>
</tr>
<tr>
<td>(\ln E)</td>
<td>-0.25563</td>
<td>0.916574</td>
<td>1</td>
<td>0.896882</td>
</tr>
<tr>
<td>(\ln GDP)</td>
<td>-0.40822</td>
<td>0.992063</td>
<td>0.896882</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Authors’ Computation (2017).
The average mean of the result revealed that the trend of carbon emission over the years had been negative on an average of 7.38%. This implies that on an average carbon emission falls by 7.38% between 1971 and 2017. The average mean of financial development and energy consumption ranges between 6.93% and 6.54% respectively. This implies that financial development and energy consumption increased on an average of 6.93% and 6.54% between 1971 and 2017. Gross domestic product also increased on an average of 9.02%. This implies that output in Nigeria over the years grows on an average of 9.02% between 1971 and 2017. The spread of the variables as revealed by the skewness result revealed that carbon emission between 1971 and 2017 has a long tail to the left (i.e. negatively skewed), while financial development and gross domestic product have a long tail to the right (i.e. positively skewed). The Jaque-Bera test revealed that the distribution of the variables is normal over the years under study since they have a probability value greater than 10%.

**Table 2**

| Source: Authors’ Computation (2020). |

The unit root test result in Table 3 revealed that the stationary of all the results are in the same order. The variables are found to be stationary at order of integration one [I(1)]. This implies that the null hypothesis of no presence of unit root is rejected. Therefore, we conclude that there is unit root problem among the variables. As a
result of this, the Johansen Cointegration test was carried out to check if a long-run cointegrating relationship exists.

Table 3

Unit Root Test Result

<table>
<thead>
<tr>
<th></th>
<th>Level</th>
<th>First Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Trend and Intercept</td>
</tr>
<tr>
<td>T.stat</td>
<td>None</td>
<td>-0.08336</td>
</tr>
<tr>
<td>C.V</td>
<td>1%</td>
<td>-2.61858</td>
</tr>
<tr>
<td></td>
<td>5%</td>
<td>-1.9485</td>
</tr>
<tr>
<td></td>
<td>10%</td>
<td>-1.61214</td>
</tr>
<tr>
<td>Prob.V</td>
<td>None</td>
<td>0.6494</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>InF</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>T.stat</td>
<td>5.793232</td>
<td>-1.59866</td>
</tr>
<tr>
<td>C.V</td>
<td>1%</td>
<td>-2.61858</td>
</tr>
<tr>
<td></td>
<td>5%</td>
<td>-1.9485</td>
</tr>
<tr>
<td></td>
<td>10%</td>
<td>-1.61214</td>
</tr>
<tr>
<td>Prob.V</td>
<td>1</td>
<td>0.7775</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>InE</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>T.stat</td>
<td>2.369383</td>
<td>-2.79496</td>
</tr>
<tr>
<td>C.V</td>
<td>1%</td>
<td>-2.61858</td>
</tr>
<tr>
<td></td>
<td>5%</td>
<td>-1.9485</td>
</tr>
<tr>
<td></td>
<td>10%</td>
<td>-1.61214</td>
</tr>
<tr>
<td>Prob.V</td>
<td>0.995</td>
<td>0.2067</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>InY</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>T.stat</td>
<td>6.303687</td>
<td>-1.95671</td>
</tr>
<tr>
<td>C.V</td>
<td>1%</td>
<td>-2.61858</td>
</tr>
<tr>
<td></td>
<td>5%</td>
<td>-1.9485</td>
</tr>
<tr>
<td></td>
<td>10%</td>
<td>-1.61214</td>
</tr>
<tr>
<td>Prob.V</td>
<td>1</td>
<td>0.6081</td>
</tr>
</tbody>
</table>

Source: Authors’ Computation (2020).
Since the unit root test turned out to be stationary at first difference, the Johansen Cointegration test was carried out to check if a long run cointegrating relationship exists.

From the Johansen Cointegration test we found that there are at least two cointegrating factors which imply a linear long run cointegrating relationship exist among the variables at 10% level of significance. The result is presented below in Table 4.

**Table 4**

**Johansen Cointegration Result**

<table>
<thead>
<tr>
<th>Hypothesized No. of CE(s)</th>
<th>Eigenvalue</th>
<th>Statistic</th>
<th>Critical Value</th>
<th>Prob.**</th>
</tr>
</thead>
<tbody>
<tr>
<td>None *</td>
<td>0.466251</td>
<td>54.50709</td>
<td>44.49359</td>
<td>0.0104</td>
</tr>
<tr>
<td>At most 1 *</td>
<td>0.312536</td>
<td>28.13821</td>
<td>27.06695</td>
<td>0.0767</td>
</tr>
<tr>
<td>At most 2</td>
<td>0.227058</td>
<td>12.39889</td>
<td>13.42878</td>
<td>0.1388</td>
</tr>
<tr>
<td>At most 3</td>
<td>0.03696</td>
<td>1.581723</td>
<td>2.705545</td>
<td>0.2085</td>
</tr>
</tbody>
</table>

Trace test indicates 2 cointegrating eqn(s) at the 0.1 level

* denotes rejection of the hypothesis at the 0.1 level

**MacKinnon-Haug-Michelis (1999) p-values**

<table>
<thead>
<tr>
<th>Hypothesized No. of CE(s)</th>
<th>Eigenvalue</th>
<th>Statistic</th>
<th>Critical Value</th>
<th>Prob.**</th>
</tr>
</thead>
<tbody>
<tr>
<td>None *</td>
<td>0.466251</td>
<td>26.36887</td>
<td>25.12408</td>
<td>0.0709</td>
</tr>
<tr>
<td>At most 1</td>
<td>0.312536</td>
<td>15.73932</td>
<td>18.89282</td>
<td>0.2404</td>
</tr>
<tr>
<td>At most 2</td>
<td>0.227058</td>
<td>10.81717</td>
<td>12.29652</td>
<td>0.1636</td>
</tr>
<tr>
<td>At most 3</td>
<td>0.03696</td>
<td>1.581723</td>
<td>2.705545</td>
<td>0.2085</td>
</tr>
</tbody>
</table>

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.1 level

* denotes rejection of the hypothesis at the 0.1 level

**MacKinnon-Haug-Michelis (1999) p-values**

The long-run result revealed that financial development impacted negatively on carbon emission. This implies that as financial development increases, carbon emission decreases. Energy consumption impacted positively on carbon emission.
This implies that a percentage change in energy consumption results in 12.7% increase in carbon emission. In the same vein, gross domestic product had a positive impact on carbon emission. This implies that as the output of the economy increases by one percent, carbon emission increases by 1.57%. The result is presented below in Table 5.

**Table 5**

**VECM Long-run Estimation**

<table>
<thead>
<tr>
<th>Variables</th>
<th>InC(-1)</th>
<th>InF(-1)</th>
<th>InE(-1)</th>
<th>InY(-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CointEq1</td>
<td>1</td>
<td>-1.7535</td>
<td>12.64347</td>
<td>1.565406</td>
</tr>
<tr>
<td>S.E</td>
<td>-0.443</td>
<td>-4.3017</td>
<td>-0.43238</td>
<td></td>
</tr>
<tr>
<td>T-stat</td>
<td>[-3.95821]</td>
<td>[2.93918]</td>
<td>[3.62041]</td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Authors’ Computation (2020).

In the short run, the equation conforms to the a-priori expectation of a negative sign of the error correction term value. The result showed that divergence of carbon emission from the expected equilibrium in the short-run is corrected by 10.2% back to equilibrium in the long-run. The result is presented below in Table 6.

**Table 6**

**VECM Short-run Result**

<table>
<thead>
<tr>
<th>Error Correction:</th>
<th>D(InC)</th>
<th>D(InF)</th>
<th>D(InE)</th>
<th>D(InY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CointEq1</td>
<td>-0.10244</td>
<td>0.147054</td>
<td>-0.00815</td>
<td>-0.06585</td>
</tr>
<tr>
<td></td>
<td>-0.05319</td>
<td>-0.04923</td>
<td>-0.0057</td>
<td>-0.04792</td>
</tr>
<tr>
<td></td>
<td>[-1.92578]</td>
<td>[2.98731]</td>
<td>[-1.42826]</td>
<td>[-1.37401]</td>
</tr>
</tbody>
</table>

**Source:** Authors’ Computation (2020).

Vector Error Correction Model (VECM) Granger causality test revealed that there is no direction of causality between financial development and carbon emission. A unidirectional causality runs from energy consumption to carbon emission. This implies that energy consumption causes carbon emission. The result also reveals no direction of causality between GDP and carbon emission. But, overall, all the variables Granger causes carbon emission. The implication of this is that all the variables jointly cause carbon emission. The result is presented below in Table 7.
4.1. VECM Granger Causality Test Result

*Table 7*

Dependent variable: D(InC)

<table>
<thead>
<tr>
<th>Excluded</th>
<th>Chi-sq</th>
<th>df</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>D(InF)</td>
<td>1.005782</td>
<td>1</td>
<td>0.3159</td>
</tr>
<tr>
<td>D(InE)</td>
<td>5.844818</td>
<td>1</td>
<td>0.0156</td>
</tr>
<tr>
<td>D(InY)</td>
<td>1.786586</td>
<td>1</td>
<td>0.1813</td>
</tr>
<tr>
<td>All</td>
<td>8.141504</td>
<td>3</td>
<td>0.0432</td>
</tr>
</tbody>
</table>

*Source: Authors’ Computation (2020).*

4.2. Discussion of Findings

The study result confirms that at the early stage of finances in the Nigerian environment, there are tendencies that the environment is affected negatively due to the financial capacity of investors below what is required for a sustainable environment. As financial development remains low, economic activities and the energy consumption does not increase emission in the environment. However, in the long run where the economy experiences some development in its finances, emission is reduced, but its economic activities and the energy consumed increase emission in the environment. This can be traced to the deficient development experienced in the energy sector of the economy and slow growth in the level of the country’s economic activities. Many businesses and households see fossil fuel as the cheapest alternative energy means to consider, therefore contributing to the degradation of the environment through their emissions.

5. Conclusion and Recommendations

The study analysed the dynamic effect of financial development on carbon emission in Nigeria using Vector Error Correction Model (VECM). The data used spans between 1971 and 2017. From the results, a long run cointegrating relationship was found between financial development and carbon emission in Nigeria. The VECM result showed that in the short-run about 10.1 percent of divergence of carbon emission in the long-run as result of an increase in financial development is corrected. Also, in the short-run, financial development impacted positively on carbon emission, while output and energy consumption had a negative impact on carbon emission. In the long run, it was revealed that financial development had a negative impact on
carbon emission in Nigeria, while energy consumption and GDP impacted positively on carbon emission. This implies that in the long-run increase in financial development reduces the amount of emission, while GDP and energy consumption increase emission. The findings are in consonance with the a-priori expectation of Shahbaz et al (2013) that the relationship between financial development and carbon emission is U-shaped in the long-run, while increase in output induces more energy consumption which increases carbon emission in the economy. The causality result on the other hand also revealed that there is no direction of causality between financial development - output and carbon emission in Nigeria, but a unidirectional causality runs from energy consumption to carbon emission. However, considering all the variables together, the result revealed the existence of a causal relationship running from the variables to carbon emission. This implies that financial development solely does not imply carbon emission, but explains carbon emission through other variables such as energy consumption and GDP, because it is an investment decision which improves the production capacity and energy demand. We therefore concluded that financial development is an important factor that should be included in the model of determining the factors that contribute to emission in Nigerian economy. From the findings, we recommended that to achieve a sustainable environment, there is the need to increase access to credit by the private sector which will influence their consideration for environmentally-friendly energy resources.

References


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✓ Key words – precise and sufficient, not more than five.

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