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Consumer Perception of GSM Service Quality by Networks' Providers in Kaduna Metropolis: A Comparative Examination

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Abstract

The Nigerian Global System for Mobile (GSM) telecommunication has witnessed rapid development in the last decade, following full deregulation and liberalization of the sector in 1999. The number of service providers as well as consumer subscription level has increased beyond imagination, thereby intensifying competition among the GSM service providers and increasing customers switching habit and defection rate among consumers. In this scenario, a defensive competitive strategy that is capable of keeping or retaining the existing GSM companies' consumers rather than an aggressive competitive strategy that seeks to attract new customers is much more effective. A key defensive strategy is the maintenance and improvement of GSM companies' service quality, as their satisfaction and patronage is likely to increase with perceived higher service quality. Thus, the prime objective of this study is to assess consumers' perceived service quality of GSM networks in Kaduna metropolis. A questionnaire instrument was used to generate data from 500 respondents that were chosen using purposive sampling method. The data was subsequently analyzed using descriptive statistics. The study found that perceived service quality of the GSM operators in Kaduna metropolis was high and satisfactory. However, the perceived service of Glo network is the highest, followed by Zain and then Mtn. Hence, the study recommended that GSM operators should strive to sustain their current level of service quality in the short run, but should also strive to improve its service quality components in the long run so that customers perception of their service quality will improve from high to very high, or from satisfactory to very satisfactory.

Keywords: GSM, Service Quality, Service Quality Dimensions, and SERVPERF

JEL Classification: O31, L15, L84, L86

1. Introduction

In a competitive service industry such as Nigerian Global System for Mobile (GSM) telecommunication industry, service quality could be used as a strategic tool by any GSM company to have a competitive edge. Alabede, Affrin and Idris (2011) stressed that Organizations operating in the private sector have long realized that customer satisfaction and continue patronage as well as loyalty is secured through high quality service. Asubonteng, McCleary and

Swan (1996) buttress that as quality of service rendered to customer increases, satisfaction with the service and intention to reuse the service equally increase, and vice versa.

Beside competition, the GSM companies have a responsibility of providing quality GSM services to their existing and prospective customers. However, it is observed that the GSM companies operating in Nigeria provide substandard services in terms of poor reception, poor connectivity, and excessive call rates as at year 2008 which have heightened customers' dissatisfaction and complaints. It has also been observed that each of the three GSM companies operating in Nigeria as at year 2008 strived to distinguish itself by providing better quality services though not in a sustainable manner but all in a bid to meet up with quality standards and attract or retain profitable customer.

Consumers are the best determinant of a service quality in any given industry (Parasuraman, Zeithaml and Berry 1985; Cronin and Talyor, 1992). Consequently, Rana (2009) measures the service quality of the educational sector in Pakistan using students' customers; Qin, Prybutok, Knipper and Hossain (2010) investigate the determinants of customer-perceived service quality in fast-food restaurants in U.S.A; Oyeniyi (2009) examines the service quality of General System for Mobile (GSM) in South-western Nigeria using students; and Abdullahi (2009) assessed the service quality of telecommunication industry in Abuja, Nigeria.

Since there are many GSM service providers in Nigeria, the quality of the GSM telecommunication services by different companies can hardly be the same. Consumers are likely to have differing or varying perceptions of the GSM service quality of the three major GSM service providers in Kaduna metropolis as at 2008. Thus, this study evaluates the service quality of the GSM companies operating in Kaduna metropolis through their customers. Specifically, the objectives of the study are twofold. First, the study assesses consumers' perception of GSM networks' service quality; and second, to identify the GSM company that has highest perceived service quality.

2. Literature Review

2.1 The Concept of Service Quality

Suuroja (2003) observes that the traditional conceptualizations of service quality are based on the disconfirmation paradigm in which perceived quality is viewed as result of comparing particular performance with some kind of a standard. Based on this paradigm, Grönroos (1984_a) define service quality as the "outcome of an evaluation process, where the customers compare their expectations with the service they have received." In the same manner, Parasuraman *et al.* (1985) define service quality as "a function of the difference between expectation and performance along the quality dimensions."

According to Grzanic (2007), there are two basic approaches adopted in measuring quality service of a service firm: technical approach and non-technical approach. The technical approach are product/production oriented and emphasizes on standardization of services thereby impeding or minimizing the influence of the personnel that are directly involved in providing a service. This approach enhances efficiency but is contradictory to the aspirations of the consumers who expect service firms to treat them as individual people with marked personal tenderizes and expectations (Grzanic, 2007).

The non-technical approach is consumer oriented. Here, expectations are the basis for satisfaction. Hence, after consuming services, consumers usually compare their early expectations with experience or perception and the result can range from satisfaction to

dissatisfaction. In line with this approach, Green, Chakrabarty and Whitten (2007) contend that service quality is what the customer perceives while receiving services from the provider. Chakrabarty (2006) corroborates that service quality can be understood as how best an organization conforms to the requirements of its customers, and satisfies them in various aspects of the delivery of service.

2.2 Models and Dimensions of Service Quality

Service quality is not viewed in literature as a separate construct, but rather as an aggregate of several dimensions or components (Suuroja, 2003). But there is no general agreement either about the nature or content of the dimensions.

To Grönroos (1984_a), the customers' perceptions of the service process are divided into two dimensions: technical quality and functional quality. The former refers to the outcome dimension – what the customer receives, the latter has to do with the process dimension- how the service is taken care of and how the service provider functions. Image of a company at a local level, serves as a filter that influences quality perceptions either favourably, neutrally, or unfavourably, depending on whether the customer considers the service provider as good, neutral, or bad (Grönroos, 2000).

On the part of the Lehtinen and Lehtinen (1991), service quality is in three dimension: physical quality, interactive quality, and corporate quality. The physical quality includes the physical environment and instruments (as tableware in restaurants); interactive quality is derive mainly from whether the service provider's interaction style fits in with the customer's participation style; while corporate quality is mainly the evaluation of corporate image. These dimensions can be considered as the basic source of quality in a service company.

According to Lovelock and Wirtz (2004), the most extensive research into quality is strongly user or consumer oriented. According to Lovelock and Wirtz (2004), Zeithaml, Bitner and Gremler (1996) identify ten criteria consumers use in evaluating service quality. These are Credibility (trustworthiness, believability, and honesty of the service provider); Security (the elimination of fear, danger, risk or doubt from the consumers); Access (making the service providers and equipment available, reachable and approachable); Communication (listening to consumers and keeping them informed in a language they can understand); Understanding the customer (striving to know customers and their needs); Tangibles (the appearance of physical facilities, equipment, personnel, and communication materials); Reliability (ability of the company and its employees to perform the promised service dependably and accurately); Responsiveness (willingness of the service company employees to help customers and provide prompt service); Competence (the extent to which the company employees possess the required skills and knowledge to perform and deliver services to consumers); and Courtesy (politeness, respect, consideration, and friendliness of contact personnel).

In their subsequent research, Zeithaml *et al.* (1993) found a high degree of correlation among several of these variables and so consolidated them into five broad dimensions: tangibility, reliability, responsiveness, assurance, and empathy (Lovelock and Wirtz, 2004). Based on the above named five factors/dimensions, the researchers developed the 22-item SERVQUAL scale (Kotler and Keller, 2006). SERVQUAL is an instrument that measures service quality as a computable gap between customers' expectations about the service and their actual evaluation of that service in five dimensions (Suuroja, 2003). According to Palmer (2005), measures of services quality (via disconfirmation or SERVQUAL model) can be derived quite simply by subtracting expectation scores from perception scores. He added that the scores can be weighted

to reflect the relative importance of each aspect of service quality. Subsequently, the SERVQUAL result can be used to identify those components or facets of a service for which the company is particularly good or bad. It can also be used to monitor service quality over time, to compare performance with that of competitors, to compare performance between different branches within a company, or to measure customer satisfaction with a particular service industry generally. In addition, an organization or industry group can use the information collected using SERVQUAL model to improve its position by acting upon the result and seeking to surpass customers' expectations on continuous basis (Palmer, 2005). However, it could be argued that the expectation-perception results, along with demographic data, may facilitate effective customer or market segmentation. Palmer (2005) affirms that, by this approach, a service is deemed to be of high quality when consumers' expectations are confirmed by subsequent service delivery. The critiques of SERVQUAL model pointed out that expectation may not exist or be clear enough in the respondents' minds to act as a benchmark against which perception is assessed (see: Iacobucci *et al.*, 1995). Kahneman and Miller (1986) argue that expectations are only formed as a result of previous service encounters, thus, perception feed directly into expectations. There is also the practical difficulty in measuring customer's expectations. Palmer (2005:268) argues:

Ideally, expectations should be measured before a service has been consumed. However, in reality, this is often not practical, so researchers are likely to record expectations retrospectively. The danger here is that stated expectations may be influenced by subsequent performance of service delivery, making the retrospective measure of expectations fairly meaningless.

Owing to the aforementioned weaknesses of the SERVQUAL model, an alternative model Service Performance (SERVPERF) was propounded by Cronin and Taylor (1992). While using SERVPERF model, service quality is determined by simply asking customers to rate the performance of a service. In other words, SERVPERF lay emphasis on measuring service quality after it (a service) has been consumed by the customers.

Both SERVQUAL and SERVPERF models are generic measurement tools that can be applied across a broad spectrum of service industries. They have been applied in their original and modified form to different service fields: hotel (Grzinic, 2007), vehicle repairs (Miguel *et al.* 2007), telecommunication (Oyenyi, 2009), education (Rana, 2009), restaurants (Qin *et al.* 2010), banking (Padhy *et al.* 2009), and library (Satish, 2009).

Miguel, Terra da Silva, Chiosini and Schutzer (2007) captured several alternative models proposed by authors like Gronroos (1984_b); Bolton and Drew (1991); Cronin and Taylor (1992); and Teas (1993). These models are summarized in Table 1 below.

Table 1: Models for measuring service quality

Author	Model	Main Characteristics	Application
Gronroos (1984 _b)	There is no mathematical representation	Quality is function of expectations, outcome and image	Different types of services
Parasuraman, <i>et al.</i> (1985, 1988)	SERVQUAL ($Q_i = P_i - E_i$)	22-item scale using quality dimensions	Different types of services
Brown and Swartz (1989)	$Q_i = E_i - D_i$	Use 10 quality dimensions defined by Parasuraman <i>et al.</i> (1985)	Different types of services

Author	Model	Main Characteristics	Application
Bolton and Drew (1991)	Assessment model of service and value. There are many equations representing the model.	Use 4 dimensions developed by Parasuraman <i>et al.</i> (1988) and introduce the concept of value for quality assessment	Telephone services
Cronin and Taylor (1992)	SERFPERF $Q_i = P_i$	Use 5 quality dimensions defined by Parasuraman <i>et al.</i> (1988)	Different type of services
Teas (1993)	Model of ideal performance $Q_i = \sum w_i [P_i - I_i]$	Use 5 quality dimensions defined by Parasuraman <i>et al.</i> (1988)	Retail stores

Source: Miguel, P.A.C, Terra da Silva, M., Chiosini, E.L. and Schutzer, K. (2007).

2.3 Previous Studies

Studies committed to assessment of service quality of the private and public sectors or governmental organizations are handy. Nimsomboon and Nagata (2003) revealed in their study that all the attributes of service quality did not meet the users' expectation of a public university in Japan. Pillay (2004) empirically evaluated the service quality of an educational institution and found high expectations among students as against moderate perceptions, suggesting absence of service quality in the College. Satish (2009) measured the service quality of a public library in United Kingdom (UK) using SERVQUAL model and discovered that the library failed to match customers' experience with their anticipation and expectation in all dimensions, which portrays that service quality is severely lacking in the library.

An attempt to evaluate the service quality of public banks in Indian by Padhy and Swar (2009) revealed that the customers judge the reliability and responsiveness dimensions of service quality as poor. The study further revealed that both the rural and urban customers perceived the 'courtesy' dimension of the banks' service quality as poor, while the urban customers adjudged the 'tangibility' aspects of the public banks' service quality as superior. In their study, Talib and Ali (2007) established that the existence of service quality in the public sector is responsible for overall positive performance of local authorities in Malaysia.

3. Methodology

This study surveyed perceptions of consumers about the quality of service offered by GSM companies. The population of the study comprises of employees in the private and governmental organization within Kaduna metropolis; the employees constitute major subscribers and users of GSM products. The justification for using employee as the population of the study is the fact that employees are singular consumer group with sustainable income that influence regular patronage and subscription to different GSM services, which avail them the opportunities to assess the service quality of different GSM companies.

A closed-ended questionnaire containing SERVPERF scale adopted from Cronin and Taylor (1992) was designed and distributed to 500 employees working with private and public organizations within Kaduna metropolis; the employees were purposively sampled. The justification for using 500 employees is twofold: first, the workforce population of the organizations covered by the study was not officially released to the researcher which made it impossible to estimate sample size using a formula; second, related studies in Nigeria used fewer

sample size. Like the research conducted by Olukotun, Jame and Olorunfemi (2013) used purposive research design to sample 300 undergraduate and postgraduate students of Kogi State while investigating the impact of introducing GSM services in students' expenditure pattern. In examining factors influencing attitudes of patronage of GSM services, Ogwu and Sunny (2012) sampled 308 university lecturers in South-South Nigeria. Christen and Essien (2016) assessed customer satisfaction with GSM service quality in Cross River State using 300 sampled GSM subscribers. Similarly, Nwakanma, Udunwa, Anyiam, Nkwunna, Obasi and Bubagha (2018) sampled 378 subscribers of GSM in Imo State in a bid to determine factors influencing telecommunication subscribers' decision to port among network providers in Nigeria.

The SERVPERF scale was used in measuring service quality of each of the 3 GSM companies: Glo, Mtn and Zain. The SERVPERF measures services quality using 5 dimensions - reliability, tangibility, assurance, empathy and responsiveness – and 5 point Likert scale that ranges from 'strongly agree' to 'strongly disagree'. Each of the dimensions has series of questions raised under it and totaled 22 items for the five dimensions (see appendix).

The sampled GSM consumers that patronize any of the three GSM companies – Glo, Mtn or Zain – were identified. For those who subscribe to multiple GSM networks, only the network they use most frequently was considered. Finally, service quality index for Glo, Mtn and Zain was computed from the averages of the five (5) service quality dimensions as thus:

$$SQ \text{ index} = (Rb + Tg + As + En + Re) \div 5 \dots\dots\dots 1$$

Where:

SQ = Service quality

Rb = Reliability

Tg = Tangibility

As = Assurance

En = Empathy

Re = Responsiveness

Based on the suggestion of Cronin and Taylor (1992) and subsequent adoption by Fogarty, Catts and Follin (2000), Pervez (2005), and Grzinic (2007), the following criteria were employed in ascertaining state of service quality of the GSM companies:

1. Mean value of < 2.00 or 40% = poor service quality
2. Mean score of ≥ 2.00 (40%) but < 3.50 (70%) = moderate service quality
3. If sample mean is ≥ 3.50 but ≤ 5.00 , Rb, Tg, As, En, and Re (or SQ) is good, high or satisfactory

The Social Science Statistical Package (SPSS) version 17 was used to process the data descriptively. Both SERVQUAL and SERVPERF descriptive statistics inclined.

4. Results

The result of data analysis is presented under the following thematic headings:

4.1 Bio-data of the respondents

Out of 500 copies of questionnaire distributed, only 409 useable copies representing 81.8% were returned. All the returned copies of the instruments were found usable for data analysis.

The sex distribution of the respondents is 60.9% males and 39.1% females. Majority of the respondents (167 or 40.8%) are within the age group 28 – 37 years, followed by those in the age

group 18 – 27 years (97 or 23.7%), while 95 or 23.2% are within the age bracket 38 – 47 years. Fewer respondents amounting to 42 or 10.3% and 8 or 2% are within the age groups 48 – 57 years and 57 years and above, respectively.

As regards the marital status of the respondents, analysis revealed that 254 or 62.1% are married, 138 or 33.7% are single, 11 or 2.7% are widowed, while the remaining 6 or 1.5% are divorced. Furthermore, majority of the respondents (229 or 56%) have higher-level education (Bachelor, Masters or Ph.D degrees), 129 or 31.5% have medium-level education (NCE or ND), while 51 or 12.5% have low-level education (SSCE, NECO or NABTEB).

The respondents were also classified on the basis of income group. Results of the analysis revealed that majority of the respondents (257 or 62.8%) earned N50,000 or less monthly, followed by 112 or 27.4% who earned between N51,000 and N100,000 monthly. The respondents in the N101,000 - N150,000 earning bracket are 22 or 5.4%, while those earning N150,000 and above monthly are only 8 or 4.4%.

4.2 Consumers' patronage of GSM networks

In an attempt to classify respondents based on their patronage of GSM networks, data analysis revealed that majority of the respondents (215 or 52.6%) patronized MTN, followed by Zain (133 or 32.5%), and only 61 or 14.9 respondents patronized Glo (see appendix).

4.3 Perceived service quality of GSM networks

Table 2 shows that each of the service quality dimensions have sample grand mean greater than 3.50 for the Glo, Mtn and Zain GSM networks. Specifically, Glo, MTN and Zain network has a sample mean of 3.822, 3.629 and 3.719 respectively, which indicates that services quality for the three networks is good or satisfactory from the consumers' perception. However, the consumers' perception of the service quality of the 3 GSM networks are not the same; Glo network is perceived to have higher and better service quality than Zain, while both Glo and Zain networks exceed Mtn network in service quality. Overall, the service quality of the three GSM companies is 3.723 or 74%. This means that consumers' perception of GSM industry's service quality in Kaduna metropolis is good and satisfactory.

Table 2: Consumers Perception of Glo, Mtn and Zain Networks Service Quality

Service Quality Dimensions	GSM Networks			SQ Dimension (SUM)	SQ Dimension (Grand Mean)	Ranking
	Glo	MTN	Zain			
Reliability	3.866	3.57	3.672	11.106	3.702	4 th
Tangibility	3.813	3.773	3.795	11.381	3.794	2 nd
Assurance	3.898	3.723	3.775	11.396	3.799	1 st
Empathy	3.840	3.624	3.714	11.178	3.726	3 rd
Responsiveness	3.695	3.453	3.640	10.788	3.596	5 th
GSM SQ (sum)	19.112	18.143	18.594	55.849	18.617	
GSM NW SQ (Grand mean)	3.822	3.629	3.719	11.17	3.723*	
Ranking	1 st	3 rd	2 nd			

Source: Field Survey, 2008.

Furthermore, the reliability dimension is perceived to have the greatest quality (grand mean [GM] = 3.799 or 75.9%), followed by tangibility (GM = 3.794 or 75.8%), empathy (GM = 3.726 or

74.5%), reliability (GM = 3.702 or 74%), and responsiveness (GM = 3.596 or 71.9%). In sum, the dimensions of GSM service quality are rated 'satisfactory' (GM = 3.723 or 74%).

4.4 Discussion of Findings

The study examined the service quality of GSM networks in Kaduna metropolis. The study found that consumer perception of GSM networks' service quality in Kaduna metropolis is good and satisfactory. This result is apparently consistent with the findings of Abdullahi (2009) that consumer perception of service quality of GSM operators in Abuja metropolis is high. Similarly, Oyeniyi (2009) finds that consumers' perception of GSM and CDMA services in Ota exceeded their expectations, which confirms the possible existence of high service quality. In addition, a study by Pervez (2005) finds that consumers' perception of service quality of GrameePhone (a telecommunication company in Bangladesh) was high.

Comparatively, the consumers perceived the service quality of Glo network to be higher, followed by Zain, and then MTN. None the less, the consumers' patronize MTN network more than other networks perhaps because the company has the widest network coverage and they are the oldest in the market. Managing the widest network as well as largest number of consumers could explain the reasons why MTN is lagging behind by other networks in terms of service quality.

The study also established that each of the service quality dimensions – tangibility, reliability, responsiveness, assurance, and empathy - is rated 'satisfactory'. This result is similar to the findings of Oyeniyi (2009) that the assurance attribute of Glo and MTN networks was seen as having high service quality; the reliability attribute of MTN network has high service quality; and the reliability and responsiveness attributes of the GSM companies have high service quality.

5. Conclusion and Recommendation

Owing from the research findings, the study concluded that consumers' perception of the service quality of GSM telecommunications in Kaduna State is high and satisfactory. Their perception of Glo, MTN and Zain network service quality in the State was equally high and satisfactory. There was also high level of service quality perception for the reliability, tangibility, assurance, empathy, and responsiveness dimensions across the State.

Consequently, the following recommendations are made. First, the GSM operators should strive to sustain their current level of service quality in the short run, but should also strive to improve their service quality components in the long run so that customers perception of their service quality will improve from high to very high, or from satisfactory to very satisfactory. Palmer (2005) cautioned that maintaining the current customers' level of perceived quality is insufficient if their expectations have been raised over time. This suggests that, it is not good enough for the GSM operators to simply maintain their existing level of service quality, because consumers' expectations are likely to move on. Secondly, the companies should lay emphasis on improving the service quality of reliability and responsiveness dimensions because they have the least average score.

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Appendix 2: Profile of the respondents			
Variable	Category	Frequency	Percentage
Sex	Male	249	60.9
	Female	160	39.1
	Total	409	100
Age group	18 – 27 years	97	23.7
	28 – 37 years	167	40.8
	38 - 47 years	95	23.2
	48 – 57 years	42	10.3
	57 years and above	8	2.0
	Total	409	100
	Marital status	Single	138
	Married	254	62.1
	Divorced	6	1.5
	Widowed	11	2.7
	Total	409	100
Geopolitical zone	North	327	80
	South	82	20
	Total	409	100
Highest educational qualification	Low-level edu. (SSCE/NECO/NABTEB)	51	12.5
	Medium-level edu. (NCE/ND)	129	31.5
	Higher-level edu. (Bachelor degree/Masters/PhD)	229	56.0
	Total	409	100
Income	Less than N50,000	257	62.8
	N51,000 - N100,000	112	27.4
	N101,000 – N150,000	22	5.4
	N150,000 and above	18	4.4
	Total	409	100
Sector	Private	292	71.4
	Public	117	28.6
	Total	409	100

Source: Field survey, 2009.

Factors Influencing Food Security Situation among Farming Household Heads in Niger State, Nigeria

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Abstract

The objectives of this study are to determine the household food security status and factors affecting the food security status in Niger State, Nigeria. A sample size of 140 farming household heads were drawn from four local government areas among the three agricultural zones in the state. The study used food security index to determine the household status and binary regression analysis to determine the factors affecting household food security in Niger State, Nigeria. Result from the food security index indicated that 59% of the household in Niger State, Nigeria were food secured, while 41% were food insecure. Out of the twelve variables used, eight variables were found to be significant factors influencing food security status in Niger, Nigeria, including household monthly income, household family size, household heads' level of education, monthly expenditure, household head age, household livestock ownership, farm size and extension service agent contract. The research suggested that, government should intervene in empowering farming households, extension service agents need to improve on methods use in teaching and creating awareness among farming households with recent and improve methods of farming. Household heads should try and curtail the number of household size through family planning.

Keywords: Binary, Index, Extension, Zones, Empowering, Family Planning

JEL Classification: D13, H55, J13, Q18

1. Introduction

Chronic hunger and food security challenges constitute one of the major predicaments, facing the world today. Food Agricultural Organization (FAO) projected that by the end 2016 there will be about 795 million individuals trapped in serious food security challenges in the world, with about 780 million domicile in developing countries, representing 98% of the total number of people faced with such challenges. This translates into one out of nine individuals or one in every eight persons, suffers from chronic malnutrition daily in the world and in Africa respectively (FAO, 2015). However, the projected figure witnessed an increased from 775 million in 2015 to 777 million that same year and by the end of 2016 the actual people faced with serious food security problems jumped to 815 million translating into an increased of additional 38 million people up from the projected number (FAO, 2017).

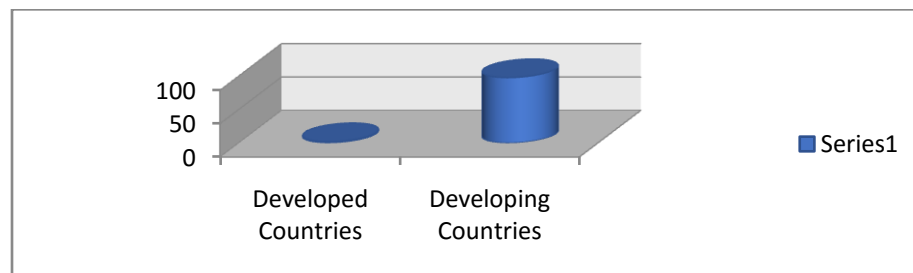


Figure 1.1: Chronic malnutrition in the world 2014/2016

Source: FAO 2015.

Recent data collected by FAO from about 150 countries in the world between 2014, 2015 and 2016 indicated that nearly 1 out of 10 people globally (9.3%) is faced with serious chronic food security challenge, this translates to about 689 million individuals (FAO, 2017). The Continent of Africa is identified to constitute the highest level of food security challenges, with about 27.4% of its total population suffering from such problem, this is four times more than any other regions in the world facing similar problem, in particular the situation is so serious in Sub Sahara Africa which witnessed an increase of about 3% between 2014 – 2016. Latin America also witnessed an increased number of people faced with serious food security problem 2014 – 2016 from 4.7% to 6.4%. However, the problem witnessed a slight decrease in Asia between 2014 – 2016 as a result of decrease witnessed in Central Asia and Southern Asia.

Table: 1.1 Prevalence of Undernourishment in the world

	Prevalence of Undernourishment in the World by Regions - 2000 – 2016									
	Percentages									
	2000	2005	2010	2011	2012	2013	2014	2015	2016	
World	14.7	14.2	11.5	11.2	11	10.8	10.7	10.6	11	
Africa	24.3	20.8	18.3	17.9	17.8	17.8	18.1	18.5	20	
Sub-Sahara Africa	28.1	23.7	20.6	20.2	20	20	20.4	20.8	22.7	
Eastern Africa	39.3	34.3	30.9	30.2	30.6	30.6	30.9	31.1	33.9	
Middle Africa	37.4	29.4	23.8	23.1	22.5	22.3	24	24.4	25.8	
Southern Africa	7.1	6.4	6.7	6.3	6.2	6.2	6.5	6.6	8	
Western Africa	15.1	12	10	9.9	9.9	9.8	9.8	10.4	11.5	
Northern Africa	6.8	6.3	5.1	4.8	8.5	8.4	8.3	8.3	8.3	
Asia	16.7	17	13.2	12.8	12.5	12.2	11.9	11.6	11.7	
Latin America/Caribbean	12	9.1	6.8	6.6	6.4	6.3	6.3	6.3	6.6	
Oceania	5.3	5.3	5	5.2	5.3	5.7	6	6.4	6.8	

Source: FAO, 2017 – State of food insecurity in the world 2016. * Projections figure.

Global stagnation in PoU as observed from Table 1.1 indicated that from 2013 to 2016 was caused by regional differences especially between Sub-Saharan Africa that witnessed an increase in the number of people suffering from serious food security problem and an improvement or reduction in the number of people that suffer from food insecurity in Asia at the same time (FAO, 2017).

All the regions witnessed an increase in the percentage PoU with exception of Northern America, Southern Asia, Eastern Asia, Central America and the Caribbean. SSA remains the hardest hit region with severe food security challenges followed by South-Eastern Asia. An alarming 22.7% of the population of SSA has been affected by food security challenges in 2016. The situation is extremely critical in Eastern Africa where estimated 1/3 of the total population are suffering from serious food security problem (FAO, 2017). Food security situation is also observed to be deteriorating in Middle Africa and Southern Africa from 22.5% and 6.2% in 2013 to 25.8% and 8% respectively.

Food security according to FAO is defined as a condition when all individuals in a household are physically and financially, under any circumstance have adequate and protected nutritious foods that meet up with their regulated diet requirement and meet dynamic and healthy lifestyle.

2. Literature Review

Various empirical researches were conducted on food security status of households all over the world, notable Arimond and Ruel (2002) in Ethiopia; Taruvinga, Muchenie and Mushunje (2013) South Africa; Olafin and Babatunde (2007) Nigeria; Makombe et al (2010); Kuwornu, Suleyman and Amegashie (2013). Recently in Nigeria the following researches were carried out to determine food security status in different parts of the country including the work of Olayiwola, Tashikalma and Giroh (2017); Agulanna, Ikpi, Okoruwa and Akinyosoye (2013).

Arene and Anyaeji (2010) investigated the food security status of households using food security, results revealed that 60% of the households were food insecure due to low monthly per capita food expenditure which is below two-third (2/3) of the mean monthly per capita food expenditure. Other studies that used this model include Adebayo (2010), Fakayode, Rahji, Oni and Adeyemi (2009).

Olayiwola et al. (2017) investigated the food security and coping strategies adaptation among rural household in rural Oluyole area of Oyo State, Nigeria. The results outcome indicated that majority of households were classified as food insecure and selling livestock, purchasing food on credits, skipping meals and children eating first were the coping strategies adopted by rural households.

Abur (2014) investigated food security status among rural household in Guma, Benue in Nigeria using food security index, the results indicated that food insecurity was higher among household heads in the age group (40 – 45 years) with 27.5%, while the severity is extremely higher among the age group of (50 years – Above) with 24% and 41% respectively.

Ifeoma and Agwu (2014) observed food security status using binary logistics among rural farming households in Kano. Results indicated that 74% were food secured. Education, sex, family size and access to credit facility were the major determinant of food security among the rural household in Kano, Nigeria.

Ivanda, Igbokwe and Olatunji (2015) investigated food security condition among Tiv farming households using food security index. Result revealed that 46.9% of the farming households were food insecure and in order to fight food insecurity, farming households used mixed cropping and high yield agricultural inputs.

Various literatures indicated that, there is little or no information concerning food security situation among the farming households in Niger, Nigeria, therefore this study bridge the gap.

3. Methodology

3.1 Data and Sample

Questionnaire was used to obtain the information among the 140 household heads sample. A stratified sampling method was used and four local government areas were drawn randomly, one each from the three agricultural zones in Niger State and one control sample. Descriptive analysis and food security index were used to determine the status of food security among households and its major determinants.

3.2 Food Security Index

According Maxwell (1996) food security index can be determined using two basic approaches namely; consumption patterning using a recall process for each households food intake to determine the calorie or using expenditure of the households overtime to determine increase or decrease in the household food stocks.

The study used the consumption pattern approach, where household food security status is determine after converting each food items consumed by each household into grams (matching it with calorie content) and then divide it by daily recommended energy intake by each individual depending on the age and sex with table provided by Stefan and Pramila (1998) in appendix (2) and converted into an average by Kuwornu et al. (2013) in appendix (3).

A table of common food items consumed in Nigeria with calorie content of each was adopted as given by Oguntona and Akinyele (1995) in appendix (1). Base on recommended calorie intake provided by FAO to be 2, 470 kcals for adult and adult equivalent in Nigeria, the index is given as follows:

$$\pi_i = \frac{\eta_i}{R} \dots \dots \dots 2$$

π Indicates food security status for i^{th} household, η indicates daily per capita calorie of household i^{th} and R indicates daily per capita calorie requirement.

Surplus/shortage index determine the extent to which individual household either exceeded food security line or the extent of shortage. The surplus/shortage index is given as follows:

$$S_i = \frac{1}{\alpha} \sum_{i=1}^{\alpha} \delta_i \dots \dots \dots 3$$

Where δ_i is given as $\frac{\pi_i - R}{R}$

$$S_i = \frac{1}{\alpha} \sum_{i=1}^{\alpha} \frac{\pi_i - R}{R} \dots \dots \dots 4$$

α Indicates household identified as food secure, δ indicates per capita calorie surplus.

Food security is measured as a binary, taking (1) for food secure household and (0) for food insecure household.

3.3 Logistic Regression Model

The study also used the Logistic Regression Model to determine factors influencing food security status of the households'. The Logistic Model used coefficient, odds ratio and marginal effect to provide explanation of each variable in the model. The implicit model is given as follows:

$$\pi_i = \phi\chi_i + q_i \dots\dots\dots 5$$

ϕ Indicates vector of the parameter estimates, χ_i vector of the explanatory variables and q_i indicates the error terms.

Age of the Household head: This represents number of years spent by the household head in the study area. A prior of household head age is positive depending on factors prevailing in the study area.

Size of the Household: Household size indicates the number of adult equivalent consuming from the same pot in a household. The a-prior is that, household with high number of household could be food insecure especially if the household comprises of unproductive household member, than a household with small size members.

Farming experience by Household Head: Experience in farming activities indicated in term of the number of years involved in agricultural activities. The a prior expectation is that household head with large number of experience especially under the age of highest productivity, the higher the household will be in term of food secure as compared to household with small number of years of farming experience.

Ownership of land by the head of the household: Land ownership structure of household head could be family inherited, individually owned or rented. Household head's land ownership through private ownership and rented is expected to be used maximally with the aim of producing so much, than household owned by means of family inheritance.

Farm size: Household head's farm size plays an important role in determining food security status of household. The expectation is that, household head with large farm size tend to be more food secure than household head with small farm size, all things being equal.

Expenditure: Household expenditure indicates the Naira amount spent by households monthly. Household with high monthly expenditure spent on food item, is expected to be food secured than households with lower monthly expenditure on food items.

Access to credit facility by household head: This refers to loan facility availed to household head toward farming activities measure in Naira amount. Household head who benefitted from credit facility assigned (1) and if otherwise assigned (0).

Extension service: Extension service agent contact: The more frequent the contacts with farming household heads, the higher the output expected and consequently the more food secure the households.

Household head earning: Measure in Naira value on monthly basis. The expectation is with high earning by household head, food security is supposed to be guarantee, than with lower earning.

Average family size among household is 11 individuals, in term of classification 52% are with the range of 1 – 10 individuals; 37% are within 11 – 20 individuals and 11% within 21 – above individuals. Household head level of education from Table 4.1 shows that 33% have tertiary education qualification, 30% have primary education, 19% have adult education and 18% have secondary education.

Average household head farming experience from Table 4.1 shows 11 years as average among the respondents. Classification of the years of experience shows that 27% have 1 -10 years farming experience, while 60% have 11 – 20 years and 13% have 21– above years experience. Table 4.1 shows that farm size ranging 1 – 5 ha account 85% and about 15% are 6 – 10 ha. In term of land ownership from Table 4.1 shows that 75% of the land ownership is through family inheritance, about 18% are owned through rent and only 7% owned through outright purchase. In term of establishing contact between farming households and extension service agent, indication from Table 4.1 shows that 47% have not establish any contract, about 27% established a contract of once in a month while 26% established twice a month contact with extension service.

Economic profile from Table 4.1 shows that average monthly income N60, 800 among household head. In term of classification about 62% are within N10, 000 – N100, 000, about 25% are within N101, 000 – 200, 000 and 13% within N201, 000 – Above. In term of household monthly expenditure, Table 4.1 shows that the average monthly expenditure is N43, 000, while in term of classification, about 93% are within N10, 000 – N100, 000 while 22% within N101, 000 – N200, 000 and 25% within N201, 000 – above. In term of access to credit facility among farming household head shows that about 27% of the farmers benefitted from credit facility, while 73% were unsuccessful.

Table: 4.1 Socio-economic Characteristics of Household Heads

Variables	Frequency	Percentage	Means
<i>Household Age</i>			46
18 - 20 Years	4	2.9	
21 - 30 Years	20	14.3	
31 - 40 Years	38	27.1	
41 - 50 Years	56	40	
51 - Above Years	22	15.7	
<i>Household Head Gender</i>			
Female	9	6.4	
Male	131	93.6	
<i>Household Marital Status</i>			
Single	0	0	
Married	131	98	
Widowed	4	1	
Divorced	5	1	
<i>Level of Education</i>			
Adult Education	27	19	
Primary	42	30	

Variables	Frequency	Percentage	Means
Secondary	25	18	
Tertiary	46	33	
<i>Farming Experience</i>			22
1 - 10 Years	38	27	
11 - 20 Years	84	60	
21 – Above	18	13	
<i>Household Size</i>			11
1 - 10 Individuals	73	52	
11 -20 Individuals	52	37	
21 – Above	15	11	
<i>Farm Size</i>			
1 - 5 ha	119	85	
6 - 10 ha	21	15	
11 – Above	0	0	
<i>Land Ownership</i>			
Inheritance	105	75	
Purchased	10	7	
Rent	25	18	
<i>Extension Visitation</i>			
None	66	47.1	
One a month	38	27.1	
Twice a month	36	25.8	
<i>Credit Source</i>			
Yes	38	27.1	
No	102	72.9	
<i>Household Head Income</i>			N65, 000
N10, 000 - N100, 000	87	62	
N101, 000 - N200, 000	35	25	
201, 000 – Above	18	13	
<i>Household Head Expenditure</i>			N71, 000
N10, 000 - N100, 000	93	66	
N101, 000 - N200, 000	22	16	
N201, 000 – Above	25	18	

Source: Field Survey, 2017

4.2 Household Food Security Status

Table 4.2 shows the percentage of households identified as food secure and food insecure among the farming households in Niger, Nigeria. Evidence from the Table 4.2 indicates that 59% of the households are food secure, while an estimated 41% are classified food insecure. The result was

obtained after converting household's size into adults equivalent. A total of 445 adults equivalent were obtained from the total of 140 households in the study area. Daily Calorie Consumption (DCC) for household classified as food secure from Table 4.2 is 754,047 kcals, while Calorie Requirement is 654,356 kcal. The Per capital daily calorie consumption (PCC) among the food secures households (Adults equivalent = 263) is 2,868.27 kcals, while Per capital calorie requirement is 2,488.04 kcals. Applying equation (1) will give us a food security status of 1.17. Applying similar equation (1) will give 0.79 for the household food insecure as indicated by Table 4.2. Overall Daily Calorie Consumption (DCC) among the households is 1,110,819.29 Kcals, while overall Calorie Requirement is 1,104,284.00. Overall per capita daily calorie is 4,828.56 and overall per capital calorie requirement is 4,959.17. Applying equation (1) will give overall food security status of 0.97.

The implication of the overall food security index result of 0.97 indicates that Niger State, Nigeria is still not food secured because the index fall shy of 1 and above. Food secure households with index of 1.15 indicate that these households have exceeded the cut-off with 0.15 indicating 15% excess achievement after applying equation (2). In the same vein households classified as food insecure, have fall short of 1 since their index is 0.79 by 0.21 when translated further, after applying equation (2) is 21% shortfall. Overall, the study area has a shortfall of 0.03 indicating 3% shortfall.

Table.4.2 Food Security Status of Households in Niger State

Factor	Pooled (n = 140)		
	Food Secure	Food Insecure	All
%	58.6	41.4	100
DCC	754047.00	356772.29	1110819.29
CR	654356.00	449928.00	1104284.00
PCC	2868.27	1960.29	4828.56
PCR	2488.04	2471.13	4959.17
π	1.15	0.79	0.97
Head Count	0.59	0.41	1.00
Shortfall (Pi)	0.00	0.21	0.21
Surplus (Ps)	0.15	0.00	0.15
HH AE	263.00	182.00	445.00

Source: Field Survey, 2017

Where DDC represents daily calorie consumption, CR represents calorie requirement, PCC represents per capital calorie consumption, PCR per capital requirement, π represents food security index, HH AE represents adults equivalent.

Various empirical studies adopted food security index in determining food security status of households in Africa, especially in Nigeria where the issue of food security is taking a dangerous turn. Some of the notable among them includes Babatunde, Omotesho and Sholotan (2007); Abu and Soom (2016); Ifeoma and Agwu (2014).

4.3 Factors Influencing Farming Households Food Security Status

Table 4.3 shows factors affecting food security status, the report indicate 92.86% correct classification estimation, indicating that 93% of the independent variables accounted for changes in the dependent variable (food security status). Out of the twelve variables employed, eight are statistically significant; in term of magnitude one variable is significant, while three have insignificant effects due to low magnitude. The result of the coefficient, odds ratio and marginal effect are under the assumption that other variables in the model are held constant.

Table 4.3 shows that the coefficient of household head earning is positive 0.813 and statistically significant at 5%, with odds ratio of 2.254. This indicates positive relation between food security and household head level of income. This also means that, the odds ratio of a household headed by household head with higher income to household headed by household head with low income to be food secure is 2.254. Therefore the probability of household headed by household head with higher monthly income to be food secure is 2 times more than a household headed by household head with lower income. In the same vein, the result suggests that being household headed by household head with high income make a household to 5 percent points more likely to be food secured all thing being equal. The work of Omotayo, Ijatuyi, Olorunfemi and Agboola (2017) discovered a negative relation between food security and household head income, which is contrary to the finding of the research.

Table 4.3 also shows that the coefficient of household head level of education is positive and statistically significant at 1%, with odds ratio of 8.490. This indicates a positive relationship between food security status and household head level of education. The result indicates that odds ratio of household head with higher educational requirement compared to household head with lower education qualification to be food secure is 8.490. This suggests that, the probability of household headed by household with higher educational qualification to the household headed by household head with lower educational qualification is 9 times more. Hence there is 13 percentage points more likely that household head with higher educational qualification to be food secure, all thing being equal. The work of Babatunde et al. (2007) is in conformity with outcome of the research, that education has a positive relationship with food security status.

The coefficient of extension service agent contact from is positive and statistically significant at 1% with odds ratio of 45.002 as shown in Table 4.3. This indicates a positive relationship between food security and household head contact with extension service agent. This also means that the odds ratio of household headed by household head who established a contact with extension service agent to the household headed by household head without contact with extension service agent is 45.002. In the same vein the probability of household head who establish extension service contact compared to household head without contact are food secured. There is a 22 percentage points more likely for a household head that established extension service contact to be food secure, all thing being equal. Ifeoma and Agwu (2014) also established a positive relationship between food security and extension service agent contact and visitation.

Table 4.3 further reveals that the coefficient of household age is negative (1.049), but statistically significant at 5% with odds ratio of 0.350. This means that there is a negative relationship between food security and household head age. This also means, the odds ratio of older

household head to younger household head to be food insecure is 0.350 times more likely. In other words, the results indicates that being household headed by older household head make household to be 6 percent points more likely to be food insecure, all things being equal. However, the work of Adeniyi and Ojo (2013) established a positive relationship between food security and household head age, which is contrary to the finding of this research.

The coefficient of household family size from Table 4.3 is negative (2.983) but statistically significant at 1% with odds ratio 0.0506. This means that there is a negative relationship between food security status of household with household family size. In other words, the odds ratio of household with large family size to a household with small family size, to be food insecure is 0.0506. Similarly the result shows that being household with large family size make a household to be 17 percent points more likely to be food insecure, all thing being equal. The work of Jabo, Ismail, Abdullah and Shamsudin (2016) established a positive relationship between food security and family size, which is against the finding of this research.

Table 4.3 also indicates that the coefficient of farm size by household head is negative (1.527) and statistically significant at 10% with odds ratio of 0.217. The result signifies that there is a negative relationship between food security status and farm size. In other words, being headed by household head with small farm size, make household 9 percent more likely to be food insecure, all things being equal. The work of Jabo et al. (2016) also established a negative relationship between food security status and farm size.

Household head monthly expenditure from Table 4.3 shows a negative coefficient (1.086) and statistically significant at 10% with odds ratio of 0.337; suggesting a negative relationship between household food security status and monthly expenditure. Similarly, the result indicates that being household headed by household head with less monthly expenditure give the household 6 percent more likely to be food insecure all thing being equal. The work of Omotayo et al. (2016) also established a negative relationship between food security status and monthly expenditure.

Result from Table 4.3 further shows that the coefficient of household head ownership of livestock is negative (1.089) and statistically significant at 10% with odds ratio of 0.336. This indicates a negative relationship between food security status and ownership of livestock. This similarly means that, being headed by a household head with livestock ownership make household 6 percentage points more likely to be food insecure, all things being equal.

Table 4.3 shows that the coefficients of access to credit facility, household on production and household head involvement in farming activities are positive by 1.595, 0.221 and 0.299 respectively, but statistically insignificant, even though the variables indicate a positive relationship with food security status, while household member earning indicate a negative coefficient of 0.409, although statistically insignificant.

Table: 4.3 Binary Regression Analysis for Socio-economic variables

Variable	Coefficient	Std.Error	Z	P>/Z /	Odds Ratio	Marginal Effect
Household Head Monthly Earning	0.81	0.43	1.89	0.06	2.25	0.05
Household Head Age	-1.05	0.53	-1.99	0.05	0.35	-0.06
Household Size	-2.98	0.94	-3.19	0.00	0.05	-0.17
Household Head Level of Education	2.14	0.47	4.52	0.00	8.49	0.13
Household Members Earning	-0.41	0.45	-0.90	0.37	0.66	-0.02
Household Head Involved in Farming	-0.30	1.56	0.19	0.85	1.35	0.02
Household Own Production	0.22	0.39	0.57	0.57	1.25	0.01
Household Farm Size	-1.53	1.02	-1.50	0.13	0.22	-0.09
Household Monthly Expenditure	1.09	0.64	-1.71	0.09	0.34	-0.06
Household Head Livestock Ownership	-1.09	0.63	-1.72	0.09	0.34	-0.06
Household head Access to credit	1.60	1.62	0.99	0.32	4.93	0.09
Extension Service Agent Contact	3.81	1.40	2.72	0.01	45.00	0.22
Constants	3.49	3.03	1.15	0.25	32.85	0.00

Source: Field Survey, 2017

Various researches adopted regression models especially binary regression to identify factors affecting household food security, this include the work of Jabo et al. (2016); Ifeoma and Agwu (2014); Valyala et al. (2015); Oluwaseun (2015); Abu and Soom (2016)

5. Conclusions and Recommendation

Major factor affecting household food security status in Niger State, Nigeria have been identified in this paper. Result further indicates that 92% of the variation is explained by independent variable. Food security index further revealed that 59% of the household heads are food secure, however overall analysis revealed that household in Niger, Nigeria are food insecure, because food security index fall short of desire 1 by 0.03%. Descriptive analysis revealed that 94% of the household heads are male, with average age of 46 years. The result further indicates that 98% of the household heads are married and 33% have tertiary education in the study area and average household size is 11 individuals. In term of farming activities, the average year of farming experience among household head is 22 years, while majority of the household head have a farm size of 1 – 10 ha, with most farm land ownership emanating from family source about 75%. About 47% of the farming household heads had no contact with extension service agent.

An estimated 73% of the household heads have no access to loan facility, while average monthly income among the household heads is ₦60, 800, this translate into less than US\$2 per day signifying high level of poverty among households, while average monthly expenditure is

estimated at ₦43, 000, which is also consider extremely low hence the high level of food insecurity among household heads.

Outcome of food security results, in this study represent fair view of food security among farming household in Niger State, Nigeria and can be used for further investigation of food security or as reference benchmark for measuring food security among household in other States of the country, especially North Central region.

The study therefore recommended that farming household heads should diversify into income generating activities apart from farming, which has the tendency of increasing their monthly income and hence household food security status. Government should also set-in in order to reduce the level of poverty among the household heads, especially those located in rural area. Also policies that can directly benefit the common farmers need to be introduced, especially in agriculture like subsidy, provision of more skills extension service agents and mechanical power provision. Other recommendations include curtailing the number of household size through birth control, and basic nutritional skills among the housewives, while health environment is maintained.

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APPENDICES

Appendix 1: common food items eaten

Food items	Kcal/kg	Food items	Kcal/Kg
<i>Staple food</i>		<i>Fruits</i>	
Cassava Flour	3870	Plantain	770
Gari	3840	Banana	960
Soy flour	2600	Pineapple	320
Wheat Grain	3400	Apple	570
Cowpea (Beans)	5920	Coconut	580
Sweet Potato Tuber	1000	Guava	730
Maize Grain	4120	Sugarcane	360
Maize Flour	3500	Mongo	590
Sorghum Grain	3500	Pawpaw	300
Millet Grain	3500	<i>Meats & Animal prod</i>	
Groundnuts	5950	Cow Meat	2370
<i>Vegetables</i>		Chicken	2380
Okro	4500	Fish	2230
Tomato	880	Eggs (pieces)	1400
Pepper	3930	<i>Drinks</i>	
Onion	440	Soft drink	620
Egg plants	440	Orange Juice	400
Cucumber	270	Apple Juice	550
Pumpkin	440	Pineapple	560
<i>Beverages</i>		<i>Dairy Products</i>	
Cocoa	1200	Milk	4900
Tea	1200	Cheese	4000
Coffee	4100	Yoghurt	4100

Source: Oguntona and Akinyele (1985)

Appendix 2: Adults equivalent

Age category in (years)	Male	Female
0-1	0.33	0.33
1-2	0.46	0.46
2-3	0.54	0.54
3-5	0.62	0.62
5-7	0.74	0.70
7-10	0.84	0.72
10-12	0.88	0.78
12-14	0.96	0.84
14-16	1.06	0.86
16-18	1-14	0.86
18-30	1.04	0.80
30-60	1.00	0.82
>60	0.84	0.74

Source: Stefan and Pramila (1998)

Appendix 3: Recommended Daily Energy intake and Equivalent Scale

Age category (yrs)	Average energy per day	Factor equivalent
Children less than 6 yrs	741	0.3
Children (6 – 18) yrs	1,729	0.7
Adults (> 18) yrs	2,710	1.0

Source: Kuwornu et al., (2013).

Human Resources for Health (HRH) in Sub-Saharan Africa: Issues, Challenges and Possible Solutions

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Abstract

Across Sub-Saharan Africa (SSA), shortage of health workers is persistent. That is, the region's human resources for health are not enough. Across the SSA region, health systems are weak, and this affects both the structures and the agents of health care. Although several studies have shown that the human resource for health (HRH) challenge affects Africa mostly amongst other continents of the world, however, possible solutions lie within the SSA region itself. This paper examines human resources for health challenges in SSA with examples from Nigeria, Uganda, and South Africa. These countries share similar human resources for health challenges with other countries in the region. The paper highlights existing social and structural determinants of health and how it affects the lives of Africans. It also argues using a resilient health system framework and the need for public-private partnerships for health as alternative to proffer useful solutions to the human resources for health challenges. The paper concludes that to address the human resource for health challenges in SSA, these alternative solutions can be used to strengthen the health systems of countries and improve health care delivery across the region.

Keywords: Human Resources for Health, SSA, Structures Of Health, Agency of Health, Africa

JEL Classification: I11, I18, O15, P36

1. Introduction

In sub-Saharan Africa, there exist several challenges which affect effective and efficient delivery of healthcare services. These challenges range from social to economic, from cultural to structural, from political to religious and from natural resources to human resources. Human resources for health challenge continue to persist in the health sector of many African countries. This challenge has been shown to affect healthcare quality and health systems performance. Also, the human resource for health problem in SSA undermines optimum population health and the ability of many governments to achieve universally agreed sustainable development goals that relate to health. That is, come 2030, if the existing challenges are not adequately addressed, SSA may not achieve the SDG's goal on health. Although the SSA region is facing other challenges that impede development, the human resource for health challenge remains one of the most daunting. A large number of physicians leave Africa when they complete the medical degree to other parts of the developed world in search of a career (Hagopian, Thompson, Fordcye, Johnson and Hart, 2004). Across the continent, there is a deficit in the number of both doctors and nurses and midwives causing a critical shortage of health care workers (Naicker, Plange-Rhule, Tutt and

Eastwood, 2009). The continent has only 3% of the world's health workforce (WHO, 2006), while in Kenya a recent study showed that the shortage of health workforce is likely to affect the country's attainment of the Sustainable Development Goals (SDGs) of 2030 (Miseda, Were, Muriainki, Mutuku and Mutwiwa, 2017). Hence, the inadequate human resource for health across Africa has been shown to affect health service delivery, universal health coverage, primary, secondary and tertiary health care services of many countries. Hence, the human resource for health challenge is real and also it affects health interventions that have been introduced into the continent to strengthen Africa's health system.

Addressing the human resource for health challenge in societies of SSA region as argued in this paper requires adopting other perspectives such as public-private partnership (PPP) for health which has worked in Europe (Roehrich, Lewis and George, 2014). To build Africa's human resources for health, the PPP initiative can be incorporated into health systems of various countries on the continent. This paper further argues that increased public-private partnership, based on its advantages, can be used to address the HRH challenge. Therefore, revitalising health systems in many African countries is required to adopt new models for health care delivery more so, by putting the health work force into consideration. Using a resilient health system framework approach, the paper states that Africa must begin to train its workforce to be *aware, diverse, self-regulated, integrated and adaptive* to their immediate environment. These two approaches as stated in next section of the paper can be used to advance the existing *structures of health* and the performance of *actors of health* across the SSA region.

2. Literature Review

2.1 Human Resources for Health: A Global Overview

Globally, health workers are vital for the holistic development of a country's health system, because health workers remain important to health system. These human resources cut across the broad spectrum of health service delivery from the primary level to the secondary unto the tertiary level of healthcare. Human resources for health are defined as "all people engaged in actions whose primary intent is to enhance health" (WHO, 2006: 1). For example, in the United Kingdom, 1.3 million people make up the National Health Service (NHS) workforce.

In other parts of the developed world (global north), human resources for health challenge is minimal when compared to what exists in the global south. Better working conditions are readily available to health care workers in the global north compared to their counterparts in the global south. In USA for example, the health system is formed and run based on a capitalist model with health insurance companies actively engaged in the business of health care delivery. They charge customers to contribute a certain fee and pay out all health care costs. The health system in the US operates a single-payer system centered on the principles of a free market economy which allows for high level of competition and cost for the delivery of care. Yet, health workers from SSA remain attracted to the American health system and migrate to work in it (Hagopian, et al, 2004; Cometto, Tulenko, Muula and Krech, 2013).

Table 1: Differences and similarities in the human resources for health

Indicators	Global North (High Income Countries)	Global South (Low and Middle Income Countries)
Remuneration	High/Sufficient	Low/Not sufficient
Staff Welfare	High priority	Low priority
Work environment	Conducive/Bureaucratic	Not-conducive/Fairly bureaucratic
Health insurance	Available to workers	Available to health workers
Safety at work	Guaranteed/High priority	Fairly guaranteed/average priority
Doctor to patient ratio	E.g. 2.8 (United Kingdom)	E.g. 0.1 (Zimbabwe) (World Bank, 2016)
Professional development	Given priority	Given priority

Source: Author, 2019

But in countries like Germany, all Germans and permanent residents are entitled to health care. That is, the model of health care delivery is hinged on its national social health insurance system. Based on this model, the state assumes core responsibility of health care delivery to its citizens, but private medical care still persists. In such a model, health care delivery is subsidized to the country's citizenry and their ability to afford it is supported by the state. Irrespective of the model of health care delivery in the global north, the human resources for health in these countries are well catered for when compared to the global south. That is, the challenges facing human resources for health are minimal as workers are guaranteed a regular salary and better working condition unlike their counterparts in the global south (Cometto, *et al.*, 2013).

Human resources of health remain a fundamental aspect for effective global health care delivery. According to the World Health Organization (WHO), the challenge of human resources for health affects mostly countries of the global south and this limits their chances of reducing maternal and child deaths, improving quality of care, and possess the ability to combat infectious diseases by providing vital life-saving interventions (WHO, 2006; Chen, Evans, Anand, Boufford, Brown, Chowdhury, *et al.*, 2004; Narasimhan, Brown, Pablos-Mendez, Adams, Dussault, Elzinga, *et al.*, 2004). More so, to attain global development initiatives aimed at making health available to all persons irrespective of where they live or work, Africa must address its human resources for health challenge.

2.1.1 Human Resources for Health in Africa

There are several works on HRH in Africa (Lucas, 2005; Kabene, Ochrhard, Howard, Soriano and Leduc, 2006; Mills, Kanters, Hagopian, Bansback, Nachega, Alberton *et al.*, 2011) highlight poor skill mix and low investment in health as among the existing challenges affecting Africa. Although HRH in Africa are a small fraction of the total population of the continent's workforce,

they make up a significant proportion of workers because of the sensitivity of their role in their respective countries. According to Anyangwe and Mtonga (2007), the average density of health workforce in Africa is 0.8 to 1000. When compared to that of Asia, Europe or North America, huge disparities exist in terms of doctor to patient ratio or nurse to patient's ratio. In the United Kingdom, the ratio of doctor to patient is 2.8, while in Zimbabwe; the doctor to patient ratio is 0.1. Such disparities continue to persist as this shows the poor state of HRH in Africa.

According to the WHO African region, HRH challenge is enormous due to pressure in training and staff development, health care management, use of health workers and proper motivation for them to remain committed to work in their countries (Nyoni, Gbary, Awases, Ndecki and Chatora, 2006; Kumar, 2007). This is because of several factors which include lack of political will to increase health spending in different countries which affects HRH. As such, Africa is lacking in sufficient manpower which constitutes human resources for health. Beyond these, structural, conflict and environmental factors also determine the nature and availability of health workers. However, the challenge limits the performance of the health systems in Africa. This also affects the composition of emerging markets capitalization in the health sector leading to low investments and reduced private engagements in the sector. The human resources of health challenge in emerging markets of Africa still persist till today. But inherent in these emerging markets are the prospects that are available to build the health sector. The HRH shortage in Nigeria, Uganda and South Africa are examined below.

2.1.2 Human Resources for Health Challenge in Uganda

In Uganda, this HRH challenge affects delivery of health care services across several districts. Uganda has a serious shortage of 1.55 health workers per 1,000 people as against the WHO recommendation of 2.28 workers per 1,000 people (Ugandan Ministry of Health, 2015). Health workers shortage has been reported in some studies as the country faces the challenge of retaining its health workforce (Ramadhan, 2015; Namakula, Witter and Ssengooba, 2014). This shortage adds the continuity burden of disease being high as the number of registered doctors and nurses is few to meet with the country's population. In rural Uganda, the health ministry reports that even where health workers are available they intend to migrate to the urban areas for better opportunities especially for their career development. This affects the performance of the Ugandan health system which relies on foreign assistance to complete its annual budget. As a form of incentive, an allowance for lunch was added as part of the benefits for the workers (Kumar, 2007) in order to remedy the shortage of health workers and reduce brain drain within the country. Job satisfaction remains low and this affects health workforce in Uganda, while task shifting has been introduced into the Ugandan health system as a way to address the shortage of HRH (Hagopian, Zuyderduin, Kyobutungi, and Yumkella, 2009; baine and Kasangaki, 2014).

2.1.3 Human Resources for Health Challenge in Nigeria

According to Lawal (2014), shortage of health workers in emerging communities and urban slums of south west Nigeria, affects performance of the health facilities. He stated that "health facilities in these communities do not have the required amount of manpower to attend to the large population of people that reside within these communities" (Lawal, 2014:212). In developing countries such as Nigeria, shortage of health workers have been found to affect the performance of health facilities (Hongoro and Normand, 2006). This shortage of health workers

remain a challenge facing health systems in developing countries (Ezeonwu, 2013; Awofeso, 2010). Studies have shown that there exists a shortfall of healthcare workers stationed in rural areas worldwide (Hamilton and Yau, 2004; Grobler, Marais, Mabunda, Marindi, Reuter, and Volmink, 2009), due to their preference to work in urban areas (Awofeso, 2010). In addition, shortage of health workers in informal settlements is also high (Ziraba, Mills, Madise, Saliku, and Fotso, 2009; Mutua, Kimani-Murage, and Ettarh, 2011) thereby affecting performance of health facilities. Human resources for health challenge are evident in Nigeria such that health facilities do not have enough staff to work and provide health services to patients. For those presently working in these facilities, they suffer from stress and exhaustion due to work overload. Lawal (2014) reported that health workers tend to work overtime by assisting their colleagues on duty. According to some public health officer interviewed in his study, working overtime is a regular occurrence as other colleagues too may be expected to do the same even when they are not on duty. All these are major HRH challenge facing the Nigerian health system.

2.1.4 Human Resources for Health Challenge in South Africa

Human resources for health are vital to deliver effective health care services in South Africa which has a high rate of HIV/AIDS (Rawat, 2012). But the continued strain as a result of the shortage of healthcare professionals affects the quality of delivery patients receive; and this affects performance of the health facilities and health system in South Africa. This shortage is attributed to several factors which include lack of qualified health personnel suitable for employment or poor structuring that exists within health systems such that health facilities in urban areas have more health workers compared to facilities in informal settlements and rural areas in South Africa. The influx of health workers from rural areas to urban areas is a common phenomenon in developing countries such that health facilities in informal settlements are left with few workers to attend to large population of people within the communities (Awofeso, 2010; Couper and Hugo, 2014). In addition, shortage of health workers within SSA affects performance of health facilities because they are unable to run 24 hours services to the communities they serve. Instead, health workers are only available to attend to people during the day.

2.1.5 Human Resources for Health as a Challenge in Emerging Markets of Africa

Across the continent of Africa in the past decade, various forms of venture capitalist, small and medium scale enterprises and entrepreneurs have emerged (Akuri, Bagah, and Wulifan, 2015). This has tremendously contributed to the growth of the private sector and has attracted foreign direct investments. According to McKinsey & Company, Africa has a lot of potential for growth which is different across countries. These potentials are enormous. However, emerging markets in Africa are being projected to contribute significantly to the world economy in the coming years. The IMF projects global growth especially in developing economies and emerging markets which include those of Africa. But the contribution from the health sector of many African countries has had little positive effect on the economic indices that are being projected. Because many challenges affect the health sector of African economies, there is continued reduction in its human resources for health which is vital for the growth and development of health in African.

In Africa, the human resources of health challenge is real and its impact is felt on every other sector of the economy. Without a health workforce, the capacity for economic growth is inhibited to a great extent. This challenge is one of the many that are evident in the health sector, but the

human resource challenge is peculiar because of its immediate and direct impact on market structure of emerging economies. The human resources for health challenge is not peculiar to the African continent as countries in South East Asia also experience some challenges similar to that of Africa. But the African challenge is mainly attributed to its low budgetary allocation for health spending which still falls below the WHO recommendation and the high reliance on government to fund the health sector. This, in turn, leads to inability of many governments to properly finance the health sector. More so, because a large amount of human resources for health in Africa is under government employment, the challenge continues to persist. This negative effect it portrays on the economy and markets of many Africa countries is enormous.

Table 2: Budgetary allocation for health in selected African countries

S/N	Country	Health Budget
1	Nigeria	4.16% (2017); 4.23% (2016) of total budget
2	Sierra Leone	5.1% (2015);
3	Uganda	6.9% (2015/2016); 9.0% (2016/2017). But note that over 70% of health spending is external (donors and grants)

Furthermore, human resources for health challenge in Africa is caused by poor leadership/governance for health amongst other factors which leads to weak performance of health systems (Uneke, Ezeoha, Ndukwe, Oyibo and Onwe, 2012). But the implication of the human resource challenge is present in other sectors of the economy. In many SSA countries, the presence of human resources for health challenge will lead to poor outcomes in preventive, curative and rehabilitative health services. This will in turn affect the manufacturing and service industries in the economy. In African emerging markets, the challenge of human resources for health can be addressed. This paper suggests some solutions such as use of resilient health systems framework approach. But an understanding of the social and structural determinants of human resources for health is essential.

2.2 Social and Structural Determinants of Human Resources for Health

2.2.1 Social Determinants

Both social and structural determinants of health define the health outcomes of people globally. Irrespective of the country, social determinants of health may include economic, cultural, religious, political, agricultural, environmental, etc. According to the WHO (2008: 1) social determinants of health (SDH) are thus:

“The poor health of the poor, the social gradient in health within countries, and the marked health inequities between countries are caused by the unequal distribution of power, income, goods, and services, globally and nationally, the consequent unfairness in the immediate, visible circumstances of people’s lives; their access to health care, schools, and education, their conditions of work

and leisure, their homes, communities, towns, or cities, and their chances of leading a flourishing life”.

To a large extent, these SDH play a major role in shaping the health status of people. Combined both are parameters that can explain whether or not people will stay healthy at all times because it affects their ability to access and utilise health services even where available. More so, both determinants of health have to do with the components of the social structure of any given country and how these in turn shape the health realities of the people. Although the social and structural determinants of health may appear similar in some ways, they differ because the SDH are centred around the individual, community, and political economy of health, while the structural determinants of health have to do with the available health resources for the people based on the structural component of the health system. That is, the system of health care delivery being determined as centralised or decentralised and the number of healthcare providers either public or private and the roles they play.

2.2.2 Structural Determinants

Social and structural determinants of health affect human resources for health in Africa because both are macro determinants which define the composition of health workers available to partake in a given health system. Human resources for health are borne from diverse cultural background in any given country; they have different religious and political views, and are beneficiaries of the agricultural and legal policies of their environment and are simply built on economics and availability of financial resources in a country. Hence, both social and structural determinants influence the structure of health workforce in Africa. But some of the main tenets of structural determinants of health include: health policy; health structure (public providers, private providers, mixed providers, faith-based providers or traditional providers); health ministries (federal, state and local/district level); health leadership and governance, health information system; and health financing mechanism. All these form the major structural determinants of health based on the health system of a given country. In Nigeria, for example, the structural determinants of health begin from her National Health Policy which was first implemented in 1984, revised in 2004. Now in 2016, the country presented yet another health policy. In addition, the National Strategic Health Development Plan which was implemented in 2009 is another remarkable policy documented by the Nigerian government. The National Health Act is a bill which was passed into law in 2014 but yet to be fully implemented as a key national document to direct health care in Nigeria. In terms of the country's structure for health, these documents direct and guide how health care will be distributed and implemented across all regions. The Federal, state and local ministries of health are another important part of the structures of health in Nigeria and these governments aim to implement the national policy by carrying out various public health related activities to promote good health for Nigerians. The Ministries of health have their presence in all the 774 local government areas in Nigeria. Providers of health care services are also a key part of the structures of health. Both public and private operators function in Nigeria to provide health care delivery services to the people across various communities (Welcome, 2011; Innocent, Uche, Uche, 2014). According to Lawal (2014), the public and private health providers are widely available in emerging communities and urban slums of south west Nigeria as well as across urban and rural areas of the country. Besides the providers of health care delivery being an institutional structure (structural determinant), the health financing model and

leadership/governance structure for health are also core aspects of the structural determinants of health in Nigeria.

3. A Resilient Health System Framework Approach to Address Human Resources for Health Crisis in Africa

As proposed by Kruk, Myers, Varpilah and Dahn (2015:1910), “health system resilience can be defined as the capacity of health actors, institutions, and populations to prepare for and effectively respond to crises; maintain core functions when a crisis hits; and, informed by lessons learned during the crisis, reorganise if conditions require it”. That is, such a health system can be designed to offer both preventive and curative health services to the people. Drawing from this framework, its key elements (*Aware, Diverse, Self-regulating, Integrated and Adaptive*) can be used to train, re-train and retain health workers in Africa. These elements are currently being applied to strengthen the Liberia health system to improve its performance and health service delivery to the people.

Although the challenge of human resources for health is not peculiar to only one emerging market in Africa, but too many of them, the elements of the framework can be incorporated into the health systems of many countries to improve on the lapses of its human resources for health.

Aware: while health workers undergo training, they must become aware of the role they play as key actors in solving the health crisis in Africa. Health workers across all cadres must become aware of both challenges already in existence, future damage their inefficiency will cause to health system and why their role in providing effective and efficient health care delivery is vital. Awareness is crucial for human resources for health to become more self-conscious of the public health realities which affect Africa. In addition, heightened awareness is required by government on why a non-functional and ill-funded health system is detrimental to the development of many emerging markets in Africa. More so, governments at all levels in African countries must become aware that health is a fundamental human right and an essential component to building sustainable economies of the 21st century.

Diverse: Diversity has always been a trend in health care delivery in Africa because the continent’s health workforce cuts across a wide spectrum of ethnic nationalities. Despite this diversity in population and ethnic background, there is a huge lack of diversity in human resource skills required to improve health services in Africa. In complex situations many Africans require skill to treat chronic conditions and some non-communicable diseases, which are not available because both human and adequate material resources for treatment are unavailable. In terms of diversity, there is need for structural diversity such that specialised health care services are made available in every region of any given African country. That is, such services are not limited to one region or mainly available in urban centres. But diversity in terms of availability of specialised care such as treatment for heart infections or complications. More so, there is need for more diversity in mode of training for health care workers. Such diversity must be reflected in the composition of teaching hospitals, faculties of medicine, public health, pharmacy, social medicine, etc. Having a diverse and cosmopolitan faculty for training of Africa’s essential human resources for health is crucial to address the ongoing challenges. Furthermore, cross fertilisation and training of health care workers in better equipped countries of Africa must be widely

encouraged. This will enable countries learn from one another and benefit from the progress being made in other countries.

Self-regulating: ability of a health system to self-regulate itself to a state of optimal performance after a crisis is important. But at a micro level where human resources for health are involved, health workers must become self-regulated in the way they carry out their duties. Self-regulated health workers are (a) able to anticipate a crisis even before it occurs, (b) can proffer innovative solutions to tackle such health crisis, (c) are able to mobilise the needed resources to tackle health challenges (d) can function in different environments other than their familiar social space and (e) are more committed to the improvement of the national state of health care delivery.

Integrated: human resources for health challenge in Africa can be tackled from health workers' integration. There exist too many national bodies and associations with everyone concerned on addressing specific issues with little or no synergy. As such members of such associations are mainly committed to their associations than the entire health system. Therefore, there is need for a system wide integration whereby members of different health associations make up members of the national working committee of the Federal Ministry of Health. Such an integrating programme for Africa's health workforce will further promote a collective consciousness towards the existing health policies and declarations aimed at improving health conditions of Africans.

Adaptive: Ability to adapt to change in a society is important for health workers. People must be properly trained and re-trained to be able to adapt to system-wide macro changes in the society. That is, changes that goes beyond the health sector. Adaptability of human organisms is vital for their survival and continued existence. Therefore, such adaptability is required for health workers such that when posted to work in different parts of their country, they are able to function and perform their duties. On the other hand, African countries can focus their human resources for health to become decentralised such that in the local communities where people live, they can also work as health personnel. Such has been documented in other parts of the world where community health workers on certain projects are simply members of those communities (Okonkwo, Osibogun and Onwuasiogwe, 2002; Islam, Wakai, Ishikawa, Chowdury, Vaughan, 2002; Olivier, Geniets, Winters, Rega and Mbae, 2015). Such a strategy has been shown to have improved health outcomes of people within a community. The national adaptive capacity of human resources for health is essential to improve health services in emerging markets of Africa.

4. Public-private partnership and human resources for health in Africa

Public-private partnership for health has shown positive contribution to health systems development globally. According to Roehrich, Lewis and George (2014) "governments around the world, especially in Europe, have increasingly used private sector involvement in developing, financing and providing public health infrastructure and service delivery through public-private partnerships (PPPs)". More recently, public-private partnership collaboration was initiated to tackle the scourge of Ebola in West Africa. The public-private partnership model for health care has been used to address different types of challenges in society beyond healthcare. The public-private partnership model for health has been in operation over the years "for health across many countries and all national income levels". This led to drastic reduction in the spread and improvement in health care delivery. This model for health care delivery has proved to be more effective than a single model of healthcare and it's not a new occurrence in global health care

delivery. The benefit of this model has been shown to be phenomenal in tackling diseases. It is therefore necessary to harness the advantages of this model to tackle HRH challenge in Africa.

Public-private partnership for health can be executed in Africa through the following ways:

Recruitment of health workforce: The combined effort of public and private sectors can be used to recruit health care workers. For example, where private organisations are located within urban and rural areas of Africa, these organisations can also direct their corporate social responsibilities to improve health care delivery. Private organisations can work with local government districts department in-charge of public health to support and provide the required capacity to recruit competent health care workers within and outside those communities in which they work.

Training of health workforce: The continuing education and training of health workforce in Africa is essential to strengthen their capacity to deliver. Through public and private partnerships for health, government and the organised private sector can engage in training of health care workers based on a national guideline for health workforce development in Africa.

Remuneration of health workforce: Payment of salaries and benefits of health workers remains a daunting challenge for many African governments. But with private sector engagement in health funding as a way of corporate social responsibility will support the prompt payment of workers' salaries. This is simply based on government giving private organisation certain tax cuts and rebates to enable them support with the payment of health workers in Africa.

Provision of a favourable work environment: To better perform in their duties, health workers who work in a convenient environment tend to perform better in carrying out their duties compared to those who do not. Therefore, there is need for both public and private sector to collaborate within communities where hospitals are located to make the work environment for healthcare workers more favourable.

Establishment of hospitals/health facilities: Availability of hospitals (public owned or privately-owned) is fundamental for effective health care delivery. Across Africa, having a functional hospital to meet health needs of the people will significantly reduce the burden of diseases.

Monitoring and evaluating performance of health facilities: Collaboration between the public-private sectors can aid the Ministries of Health to properly monitor activities of health facilities within different countries in Africa. Through "monitoring and regular process evaluation (which can be done) on a quarterly or bi-annual basis" (Lawal, 2014) is essential for effective delivery to people. That is, "when health facilities are well monitored, (African) governments will know what type of facilities are in operation" (Lawal, 2014) within different states, local government, districts and communities, what their needs are and how they can be met.

Health advocacy through mass and social media: Private radio stations and other forms of private media outlet can be used as partners for health education, literacy and advocacy. The mass media have been shown to be an effective tool for health communication whether in rural or urban areas. Therefore, across SSA both the public and private mass and social media outlets must partner to improve the flow of health information from the Ministries of Health to the people.

Provision of equipment to hospitals: Having adequate equipment is central to improving the way health workforce in Africa will deliver. Collective efforts of government and its private sector within each country can work together in equipping the various hospitals across the continent.

Health literacy, education and promotion: Health literacy programmes that are private sector led initiatives with support of government can work together to better educate, enlighten, inform, and promote better health initiatives for sub-Saharan Africans.

Subsidizing health care services: Because health care is capital intensive and expensive to manage, combined responses of the government and its private sector are needed to subsidise health care services for the people. There is need for a combined pool from both the public-private aimed at reducing cost of access to and utilisation of healthcare services *whenever* and *wherever* the need arises for people of sub-Saharan Africa. A *public-private health financing framework for poor economies* is a useful strategy that can proffer solutions and subsidise cost of health care to address the existing challenges associated with access to and utilisation of health services in Africa.

Provision of health insurance: Adequate provision of health insurance for Africans and its health workforce is pertinent to development of the health sector in Africa. Without insurance available to all Africans, people will be discouraged from utilising healthcare services even when its available to them for use.

Renewed corporate social responsibility to improve the health of communities in SSA: Because the private sector is profit oriented, companies can be encouraged to rethink their CSR policies and services. Many companies and private sector players can be encouraged to channel a huge part of their budget towards health care delivery. Because the health of a nation relies heavily on the capacity and capabilities of its health workforce, there is need for private sector players to focus and make health matters a top priority to improve the livelihood of Africans across the continent.

All these are some ways in which public-private partnerships for health can work to improve human resources for health challenge in SSA. With a focus on the first three points mentioned above, governments and private sector can work together to improve the welfare of Africans through provision of better health services hinged on an effective workforce. As a form of renewed corporate social responsibility, many private organisations can partner with government to improve the health system.

5. Revitalising Health Systems in Sub-Saharan Africa

Most SSA countries are multicultural in nature and are comprised of people from diverse ethnic groups. For example in Nigeria, there are several ethnic groups in a country of over 180 million people (Edewor, Aluko and Folarin, 2014; PRB, 2017). Such a high population needs a health system that is effective, efficient, and responsive, and can meet their health needs whenever and wherever they live or work. But in reality this is not so as the health indicators in Nigeria show that maternal mortality is 820 (per 100,000 live births), and child mortality is 113 (under 5 per 1,000), life expectancy is 52 and the country has a high burden of disease (communicable and non-communicable). Hence, there is need for health system strengthening in Nigeria and other African countries with similar health indicators.

The need to revitalise health systems in Africa is urgent as focus should be placed on both its existing structures of health and agency of health. The *structure of health* in many African countries is not well developed as health facilities are lacking and even where available its human resources for health are inadequate. This is attributed to the shortage of health workers the continent suffers and poor implementation of health policies and agreements by governments.

Most structures of health in Africa operate health policies that do not meet the realities of their various countries. Even in Nigeria, the health system is still plagued by low political will to make healthcare a top priority by past governments. Therefore, the structures of health need to be revisited to become people-centre. Such should be instituted from the primary level of care to the tertiary level of care whether the individual visits a public or private health facility.

Second, the agency of health is where human resources for health (health workforce) are placed in the social system of health care delivery. The agency of health begins from the Minister of Health in each African country through other actors in the ministry to the state ministries of health down to the local and district level. Among agents are health workforce (doctors, nurses, midwives, laboratory scientist, pharmacist, allied professionals, etc.), that make up the core of the agency of health in any country. In addition, there are technocrats and policy makers engaged in issues of health care, while consumers of health care services remain crucial to the dynamism in the composition of a country's agency of health. To revitalise agency of health, there is need for proper and effective checks and balances on activities of all actors except the final consumer. Proper supervision must be carried out at all times and to ensure that health workers remain committed to the ethics of the profession especially in a market structure where healthcare is given top priority as it is obtainable in developed countries. The revitalization of SSA health systems must be approached from an holistic perspectives such that the structure of health and the agency of health can guarantee better health outcomes and health systems performance.

6. Conclusion

The human resources for health challenge in SSA at present appear herculean. But inherent in SSA lies innovative solutions to address the health systems' challenges that have become "*public issues*" that cause "*private troubles*" for many families in SSA. As suggested in this paper, there is need for new thinking to solve human resources for health crisis to achieve better health outcomes for Africans. Despite the obvious realities and challenges facing SSA, which include that of its human resources for health, a resilient health system framework approach can offer some useful insights, and a renovated public-private partnership for health model can be beneficial as a strategy to tackle this challenge. More over this study suggests the need to revitalise the current health system in many sub-Saharan African countries.

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Impact Analysis of Infrastructural Renewal on Nigerian Economy

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Abstract

This paper investigates the impact analysis of infrastructural renewal on Nigerian economy. The data used is time series between 1981 to 2017 for government spending on road, communication, education and private capital. The sources of the data are from National Bureau of Statistics, Central Bank of Nigeria and World Development Index. In order to avoid spurious results, Augmented Dickey Fuller's stationarity test and Johansen's co-integration test was conducted while Vector Error Correction Model (VECM) was employed as methodology to analyse the results. Findings show that government spending on infrastructure has long-run relationship with Nigerian economy. Government expenditure on road and communication has positive and significant impact on Nigerian economy. Government expenditure and private investment has negative but significant impact on Nigerian economy. The study recommends that government should improve expenditure on road and education in order to boost economy and bring the economy to path of progress and prosperity. Since the government alone cannot provide all infrastructures for the citizens, it should partner with private sector using Public Private Partnership in the provision of infrastructure amenities in order to increase economic growth in Nigeria.

Keywords: Government Spending, Infrastructure, Nigerian Economy

JEL Classification: E62, H54, O55, O4

1. Introduction

Public spending is one of the key tools used by government to stabilize the economy. Capital spending is important towards the development of every economy either developed or underdeveloped economies. According to Okoro (2013), efficient allocation of resources among the various levels of government which include organs, strata and arms of government, and the condition for their fiscal capacity necessitate the need for public spending in the economy.

The term, capital expenditure can be defined as spending on fixed assets. It spends on items that will endure for a long time and can be used for the provision of goods and services. Government expenditure on building of new hospital, construction of new roads, purchase of new equipment or networks among other assets form examples of capital expenditure of the government (IMF, 2010). The size of government expenditure and its effect on economic growth of a nation has been a subject of interest among scholars all over the world. There are two basic functions that every government performs. First is to maintain law and order which include the protection and securing the lives of the citizenry and secondly, to provide essential infrastructural amenities such

as education, health services, drinkable water, electricity, good road among others (Al-Yousif, 2000).

It has been debated over the years by scholars that increasing government expenditure, especially those relating to socio-economic and physical infrastructure, fosters economic growth. For instance, it is believed that expenditure on education and health will raise the level of GDP through improvement on the well-being of people, thereby increasing productivity. In a similar vein, expenditure on infrastructure such as communications, roads, water, electricity and so on will lead to reduction in production costs and increase firms' profitability; thereby enhancing economic growth (Taiwo & Agbatogun, 2011).

The determination of the effectiveness of government expenditure towards the growth of the economy and fostering rapid economy depend mainly on whether it is productive or unproductive. Productive government expenditure would impact the economy in a positive manner, while the unproductive expenditure would have negative effect on the economy; *ceteris paribus* (Oziengbe, 2013). Economic growth entails increase in per-capita Gross Domestic Product (GDP). Over the years, economists have been concerned with the source of economic growth (Roller & Waverman, 2009). Therefore, the role of infrastructure has gained renewed attention over the years. According to Calderon and Serven (2004) and Estache, Speciale and Veredas (2005), from the policy view point, the renewed interest in infrastructure can be traced to the world-wide developments that occurred over the last two decades. The first was the retreat of the public sector since the mid-1980s in most developing and industrial countries from its sole role in the provision of infrastructure, leaving the scene for private sector participation in the provision of infrastructure. This was part of the worldwide effort towards increasing reliance on markets and private sector activity (privatisation of public utilities) and embracement of concessions and other forms of public-private-partnership (PPP).

Infrastructure contribute to improving the quality of life by generating amenities, providing consumption goods (transport, energy and communication services) and contributing to macroeconomic stability. Several years after independence and democratic government, successive government have not given adequate attention to infrastructural provision like road, electricity, portable water, education and health facilities. This neglect, has led to perennial traffic congestion, power outages in major cities, poor quality of roads, scarcity of potable water, irrigation and industrial water, poor education and health services among others. All these lend credence to the inadequate existing infrastructural facilities. Even educational institutions are not equipped with basic infrastructure that enhances human capital development. Infrastructure in certain isolated areas can serve as inducements to attract certain levels of industrial activities to such places. Thus, infrastructure provision, facilitates investment in less developed areas. With the provision of electricity for example, farmers in rural areas can easily process their harvested cassava roots into garri flour. The provision of infrastructural facilities is therefore, fundamental for successful rural transformation and agricultural improvement.

Infrastructure is a general word for various undertakings in an economy which are usually referred to as "social overhead capital" by development economists. Infrastructure therefore includes system of transport, communication and public (social) services. The functionality of these services lead to benefits and improves the lives of the generality of people (Ogbozobe, 1997). The public services are amenities provided by the government for the commons, which is the general public. The amenities include: health care, postal and telecommunication, water supply, electricity, education, etc. Infrastructural provision is important for economic growth and

development of every country. The availability of the infrastructure encourages private investors and assists the country in diversifying the economy. Economic diversification will assist in reducing unemployment, poverty level, manage environmental problems and the ever growing population of the developing countries.

The oil prices increased tremendously in the 1990s and 2000s in the international market and many countries use the earnings to improve infrastructural facilities and saved for the rainy days. This could not be said of Nigeria where the proceeds of the increase in the oil prices could not be translated into improved infrastructural amenities in the country as a whole. In the recent years, the price of oil which is the major source of financing public expenditure in Nigeria has fallen to its lowest level in 20 years and the infrastructural amenities are in the worst possible state. In Nigeria, several government policies have led to infrastructure deterioration, which has been characterised by erratic power supply, inefficient telecommunication, poor urban and rural road networks, which inevitably resulted in a near stagnant economic performance (BPE, 2003).

Based on the above nexus between capital expenditure and infrastructural services in Nigeria, a study such as this, is plausible to support current government policies in taking Nigerian infrastructural provision to the next level. This study, therefore, seeks to examine the impact of capital expenditure on infrastructure renewal in Nigeria. Furthermore, the paper seeks to answer the following questions: Does capital expenditure on infrastructural amenities bring about increase in Nigerian economy? Does infrastructural renewal in Nigeria have short and long-run impact on the economy?

2. Literature Review

The issue of the relationship between government expenditure and economic growth has been a focus of discussion among scholars in recent times. Oyinlola and Akinnibosun (2013) have carefully traced back the theoretical foundation of this relationship to the days of scholars like Wagner (1883) and Keynes (1936). While Wagner advocated that economic growth leads to government expenditure, Keynes postulated that economic growth is caused by government expenditures. Generally, most governments all over the world embark on public expenditure to stimulate the economy. They believe the economy cannot grow unless with government intervention and government expenditure represents a veritable instrument for controlling the economic variables. Scholars have argued that public expenditures on socio-economic and physical infrastructure enhance economic growth. Also, Aschauer (1989) found that public investment on infrastructure has elasticity of output.

Theoretically, both Keynesian and Neoclassical economists provided useful tools for government intervention in undertaking fundamental roles of allocation, stabilization, distribution and regulation, particularly in situations when market forces prove inefficient or their outcomes are socially unelectable, which is government capital expenditure (Usman, 2011).

Siyam and Adegioriola (2017) explored the nexus between infrastructural development and Nigerian economic growth, using data from 1981 to 2014. Vector Error Correction Model (VECM) was employed in the analysis. Findings from the study revealed that there is long run relationship between infrastructural development and Nigerian economic growth. VECM has the expected negative sign and is between the accepted region of less than unity. It also shows a low speed adjustment towards equilibrium. Infrastructural investment in road and communication show a positive relationship to the Nigerian economic growth, while private investment, degree of openness and education produced negative relationship to economic growth. They suggested that government should show more commitment to improving infrastructure, improving and

monitoring budgetary allocation to education to increase human capital development that is capable of using available infrastructure and resources for the attainment of economic growth. Government should also encourage the private sector with series of incentives to encourage their participation in investment activities, which will inevitably lead to economic growth.

Shuaib and Ahmed (2015) examined the impact of public finance on the growth of the Nigeria economy, using time series data from 1960 to 2013. They utilized Switching Least Square Tests and Transition Matrix test. The results revealed that public finance has a direct relationship with economic growth which is statistically significant at 5% level as discovered from the results of the various diagnostic tests. From the result of the findings, the study recommended that government should ensure that funds are internally generated and the Nigerian government should ensure that the internally generated funds are utilized judiciously. The last resort of government when the entire sources of funds become depleted is borrowing and there is the need for the government to escalate its capital expenditure in Nigeria. Corruption is a menace in any economy; therefore, government should wage a war against with all its ramifications in order to achieve economic growth. Shuaib, Mohammed and Igbinosun, (2015) investigated the impact of government expenditure on economic development in Nigeria, using time series data from 1960 to 2013. The study employed various econometric and statistical analytical methods to examine the relationship between government expenditure and economic development. They utilized various diagnostic tests on Nigeria's time series data from 1960-2013. The empirical result showed that there is a significant or direct relationship between government expenditure and economic development in Nigeria.

Al-Shatti (2014) examined the impact of public expenditure on economic growth in Jordan between 1993 and 2013. The tool of analysis was ordinary least square multiple regression model. The study investigated the contribution of each capital and recurrent expenditure on education, health, economic affairs and housing and community utilities in the total expenditure; and then identified the impact each one of them has on economic growth in Jordan. Results showed that there is a statistically significant impact of recurrent expenditure on health, economic affairs and housing and community utilities and capital expenditure on health and economic affairs on economic growth. There is no statistical significant impact of recurrent expenditure on education and of the capital expenditure on education, housing and community facilities on economic growth in Jordan. The joint effect of these components of (capital and current) public expenditure on economic growth is statistically significant as indicated by the computed F-statistics and its probability. The study therefore submits that there is an impact of public expenditure on economic growth. Ogedengbe, Shuaib and Kadiri (2013) empirically investigated the impact of the health sector on the growth of Nigerian economy using annual time series data from 1970 to 2010. They used real gross domestic product as a proxy for economic growth, total government expenditure on education, total government expenditure on health, enrolments into tertiary school, senior secondary school enrolments and primary school enrolments as proxy for human capital development. The data was tested for stationarity using Augmented Dickey Fuller (ADF) and Phillip Perron (PP) tests. Co-integration tests and Granger Causality were also used. The results revealed that there is a long-run relationship between government expenditure on education, government expenditure on health, and human capital development as a proxy for tertiary school enrolments, secondary school enrolments and primary school enrolments and economic growth. All the variables have short and long run relationship with each other as revealed by Granger-causality test. They therefore concluded that there is a feedback mechanism between human capital development and economic growth.

Egbetunde and Fasanya (2013) analysed the impact of public expenditure on economic growth in Nigeria from 1970 to 2010. The main tool of analysis used was bound testing (ARDL) approach which examined both the long-run and short-run relationships between public expenditure and economic growth. The results of the study revealed that total public expenditure has negative effect on economic growth while recurrent expenditure has little significant positive effect on economic growth.

Nworji and Oluwalaiye (2012) examined the impact of government spending on road infrastructure development on economic growth in Nigeria for the period 1980 to 2009. The study employed multiple regression analysis model specified on the basis of hypothesized functional relationship between government spending on infrastructural development and economic growth. Indicators used for government spending are values for defense, transport/communication, and inflation rate as the explanatory variables, while gross domestic product constituted the explained variable. The model for the study was estimated using the Ordinary Least Square (OLS) technique, and further evaluation was carried out using the coefficient of determination to explain the variations between the dependent and independent variables. The outcomes showed that transport and communication, including defense, individually exerted statistically significant impact on the growth of the economy; while inflation exerted positively but statistically in the period reviewed. However, the variables jointly exerted statistically significant impact on the growth of the economy.

Wang (2011) examined the total health care expenditure data of 31 countries from 1986 to 2007 in order to examine the causality between health care expenditure and economic growth. Econometric tools used were panel and quartile regression analysis. The results of the study showed that health expenditure growth enhances economic growth; but economic growth reduces health care expenditure growth. Taiwo and Agbatogun, (2011) analyzed the implications of government spending on the growth of Nigerian economy over the period of 1980 to 2009. Using Johansen Co-integration, unit root test and error correction model, it was revealed that total capital expenditure, inflation rate, degree of openness and current government revenue are the variables that have significant impact on growth in Nigeria. In the final analysis, future expenditure on capital and recurrent items should be managed along with adequate manipulation of other macroeconomic variables to ensure steady and/or accelerated growth.

2.1 Theoretical Framework

It is already well known from the literatures that models of economic growth can generate long-run growth without relying on theories of population change, as in Becker and Barro (1988), or technological progress due to Romer (1986). A general feature of these models is the presence of constant or increasing returns in the process of accumulating the factors of production (Lucas, 1988). In contrast to models in which capital exhibits diminishing marginal productivity, the stock of knowledge can endlessly grow. Even in a situation where all inputs of production are held constant, there is no reason why knowledge must also be constant at some steady state and, accordingly, no further research should be undertaken; Barro (1990), and Angelopoulos, Malley and Philippopoulos (2007).

Assume an open economy that embraces a large number of competitive firms. Without loss of generality and aggregating across firms, the production function may be given the following expression:

$$Y = AK^{\alpha} (hL)^{1-\alpha} \dots\dots\dots 1$$

where: Y denotes output, K is the private-sector capital, and L stands for labour, with α and $1-\alpha$ being the shares of private capital and labour, respectively. Parameter A reflects the constant technology level, with $A > 0$.

The assumption of constant returns becomes more plausible whenever, as in our case, capital is broadly viewed to encompass both human and physical capital. Indeed, parameter h represents human capital and we consider it to be a function of the existing total (private and public) capital of the economy. Our economy depends solely and exclusively on the growth rate of government expenditures in infrastructure rather, than on the prudent or efficient use of human capital in the steady state. However, we should not forget the production-enhancing role of the efficiency. The efficient use of government expenditures in infrastructure, has been positively contributing to a proportionate increase of the output level and, consequently, to the overall rate of economic growth.

3. Methodology

In order to avoid spurious result, the secondary data sourced from National Bureau of Statistics (NBS), Central Bank of Nigeria (CBN) and World Development Index (WDI) will be tested using various pre-test which include; Stationary test using Augmented Dickey Fuller (ADF) (Dickey and Fuller, 1979; Challis and Kitney, 1991 & Gujarati, 2004). Also, we shall confirm the co-integration status of the variables using Johansen co-integration test (Johansen, 1988). The methodology for the study shall be the Vector Error Correction Model (VECM) in order to establish the long-run relationship among the variables under consideration which include; proportion of private investment to GDP, government spending on road, government spending on communication as a proxy for non-transportation stock and government spending on education.

3.1 Model Specification

Following the relationship between infrastructure and economic growth explained in the above theoretical framework, as well as the works of Pooloo, (2009) and Nkechukwu and Okoh, (2015), the structural equation can be stated thus:

$$GDP = f(PRIINV, EXROAD, EXCOM \& EXEDU) \dots\dots\dots 2$$

In order to capture the response of the exogenous variables on the dependent variables, equation (2) can be stated in linear form thus:

$$GDP_t = \alpha + \beta_1PRIINV_t + \beta_2EXROAD_t + \beta_3EXCOM_t + \beta_4EXEDU_t + \mu_t \dots\dots\dots 3$$

Where GDP stands for Gross Domestic Product; PRIINV represents the private investment to GDP; EXROAD is the government spending on road transportation while EXCOM is government spending on communication as a proxy for non-transportation and EXEDU is government spending on education. μ is the error term. α is the constant, $\beta_1 - \beta_5$ represent the parameters of the explanatory variables. The apriori expectation from the result should be that $\beta_1, \beta_2, \beta_3 \& \beta_4 > 0$.

4. Result

4.1 Unit Root Test

Table 4.1: Stationarity Test Result

Variable	ADF Test Statistics	Test Critical Value	Level
GDP	-7.610362	-4.26274(1%)	I(1)
		-3.55297(5%)	
		-3.20964(10%)	
		-4.26274(1%)	
		-3.55297 (5%)	
PRIINV	-8.625674	-3.20964(10%)	I(1)
		-4.26274(1%)	
		-3.55297 (5%)	
		-3.20964(10%)	
		-4.26274(1%)	
EXROAD	-5.166726	-3.55297 (5%)	I(1)
		-3.20964(10%)	
		-4.26274(1%)	
		-3.55297 (5%)	
		-3.20964(10%)	
EXCOM	-4.484296	-4.5743 (1%)	I(0)
		-3.55297 (5%)	
		-3.20964(10%)	
		-4.5743 (1%)	
		-3.6920 (5%)	
EXEDU	-5.860210	-3.2856 (10%)	I(1)

The unit root critical values of hypothesis rejection were from MacKinnon (1990)

Source: Authors Computation, 2019

The result of the stationarity test is shown in the table above. The five variables (GDP, PRIINV, EXROAD, EXCOM and EXEDU) were tested for stationarity with the aid of Augmented Dickey-Fuller (ADF) test. As is the case most times, only EXCOM was stationary at levels I(0) while other variables (GDP, PRIINV, EXROAD and EXEDU) were stationary at first difference I(1).

4.2 Co-integration Test

Johansen's co-integration test is used to show the existence of one co-integrating equation in the system and to determine the existence of long run relationship among the variables. Since the two conditions are satisfied, we can estimate the model formulated using VEC method.

Table 4.2: Johansen Co-integration Test

Unrestricted Cointegration Rank Test (Trace)					
Hypothesized	Eigenvalue	Trace Statistic	Critical Value	Prob.**	
(0.05)					
No. of CE(s)					
None *	0.825231	236.9292	150.5585	0.0000	
At most 2 *	0.573807	113.3767	88.80380	0.0003	
At most 3 *	0.524298	76.70361	63.87610	0.0029	
At most 4 *	0.402146	44.75621	42.91525	0.0323	
At most 5 *	0.205504	9.892040	12.51798	0.0132	

Trace test indicates 5 cointegrating eqn(s) at the 0.05 level; * denotes rejection of the hypothesis at the 0.05 level

Source: E-views Output, 2019

In table 4.2, the result of Johansen co-integration test shows that there exist co-integration which means long run relationship among variables (GDP, PRIINV, EXROAD, EXCOM and EXEDU). The result shows that all the variables converge in the long run thereby indicating that there is long run relationship among variables. According to the trace statistic, the long-run relationship exists at 5% level of significance.

4.3 Vector Error Correction Model

The VEC model is used to determine the short-run adjustment parameters and that of co-integrating equations parameters. The short-run and long-run results are in tables 4.3 and 4.4 respectively.

Table 4.3: Normalized long run co-integration equation results

LGDP	LPRIINV	LEXROAD	LEXCOM	EXEDU
1.000000	-0.158774	0.130991	0.330499	-0.077770
	(0.02939)	(0.02214)	(0.03004)	(0.00877)
	[-5.91745]	[5.91745]	[11.0008]	[-8.86693]

Note: Standard errors in () & t-statistics in []

Table 4.4: Vector Error Correction Model Result

LGDP	LPRIINV	LEXROAD	LEXCOM	EXEDU	CointEq1
1.000000	-0.019842	0.013310	0.050830	-0.001704	-0.019666
	(0.20017)	(0.01020)	(0.04935)	(0.00384)	(0.04195)
	[-1.37176]	[1.30440]	[1.02992]	[-0.44373]	[-2.4688]

Note: Standard errors in () & t-statistics in []

The estimated results showed that government spending on road as well as communication has a positive and significant impact on economic growth in the long-run. Private investment and government expenditure on education has negative but significant impact on economic growth in the long run. Furthermore, impacts of the explanatory variables on the dependent variable are statistically significant in the long-run. The normalized long run co-integration equation results show that 1 percent increase in growth of infrastructure on telecommunication and road will lead to 13 percent and 15 percent increase in economic growth respectively. The private investment and government spending on education results are not in line with a prior expectation of positive relationship with economic growth in the long run. The implication of the result is that, private investment has not grown to the level it will have a positive impact on economic growth in Nigeria. Most of the private investors provide the needed infrastructures for their businesses which make most of the capital for the businesses to be spent in providing road, energy among other infrastructures. The result from government spending on education does not produce the expected outcome on economic growth in Nigeria. In addition, the short-run result shows that VEC model has expected sign which is negative and is statistical significant. This means that the

short-run disequilibrium will be brought to equilibrium in the long-run at the rate of 2 percent. The exogenous variables agreed with the long-run relationship.

4.4 VECM Forecast Error Variance Decomposition

The short-run dynamic property of VECM in this study is further supported by FEVD tests. As a result of this, variance decomposition in this section provides information about the relative importance of each random innovation affecting the variables in the VECM. Variance decomposition analysis indicates the proportion of movements in a sequence due to its own shocks and shocks to other variables. It shows the fraction of the forecast error variance for each variable that is attributed to its innovation and innovations in the other variables in the model.

Table 4.5: Forecast Error Variance Decomposition

Variance Decomposition of LGDP						
Period	S.E.	LGDP	LPRIINV	LEXROAD	LEXCOM	EXEDU
1	0.0301	100.0000	0.0000	0.0000	0.0000	0.0000
2	0.0520	92.6157	5.6751	0.5174	1.0788	0.0007
3	0.0699	89.1062	4.0006	0.5818	6.1663	0.0804
4	0.0857	87.4732	3.2459	0.3891	8.6656	0.1619
5	0.1005	86.7652	2.4414	0.3346	9.7014	0.2931
6	0.1147	86.3275	1.9092	0.2651	10.4682	0.4117
7	0.1268	85.2328	1.5758	0.2696	11.8475	0.4513
8	0.1394	83.4328	1.3165	0.4227	13.7164	0.4633
9	0.1525	81.9944	1.1322	0.7530	14.9259	0.4454
10	0.1652	80.9621	0.9841	0.9812	15.8131	0.4324

Source: Authors Computation

The result from the above table shows that GDP accounts for most of the variations and changes in itself with the average of 80 percent. Communication infrastructure contributed more after the 10th years with the average of 15 percent. The next variable that contributes to GDP after the 10th period is road infrastructure with the average of 0.98 percent, followed by education with the average of 0.43 percent after the 10th period. In order to achieve government objective at improving the infrastructural amenities in Nigeria in the long-run, there is need to increase expenditure on Communication, road and educational infrastructures which will contribute more to the GDP. Government should also increase the use of private investment in financing infrastructural amenities since it contributes to growth in the long run.

5. Conclusion and Recommendations

The result has shown that, there is long run relationship between infrastructural renewal and economic growth in Nigeria. The long run relationship was confirmed from the statistical significance of the variables and the positive relationship of the infrastructural renewal in road and communication with the economic growth in Nigeria for the period of study. As for other variables considered, it was deduced that, private investment, degree of openness and education produced negative relationship with economic growth in Nigeria for the period of study. The

implication of this is that, apart from the need for the government to increase commitment to improving infrastructure in the country, it is essential for the manufacturing sector to be appropriately developed (to harness the advantages of openness of the economy), improve budgetary allocation to education and monitor the spending to increase human capital development that is capable of utilizing available infrastructure and resources for the attainment of economic growth. Lastly, given the interconnectivity between infrastructure and effective operation of investment, the private sector should be encouraged with series of incentives to increase their participations through Public Private Partnership (PPP). This will improve infrastructural renewal in Nigeria and in turn lead to economic growth and development in the country.

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Determinants of Human Capital Development: Policy Implication for Economic Growth in Nigeria

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Abstract

Most theoretical studies like the endogenous growth theory have shown that countries and regions which invest heavily on human capital development should expect higher growth rates than areas with inferior levels. Understanding and addressing challenges related to human capital is thus fundamental to short term stability as well as the long term growth, prosperity and competitiveness of nations. Motivated by this understanding, the study explored simultaneously, several structural and institutional factors that may influence human capital development and its policy implication for economic growth in Nigeria. The Dynamic Ordinary Least Squares (DOLS) was adopted as analytical technique. The estimated DOLS results showed that the significant determinants of economic growth are largely from human capital development, public expenditure on health, infrastructures and democratic governance. The research therefore, suggested provision of sectoral policies, especially educational and health policies that are not only pro-people development, but create the income and welfare enhancing opportunities needed to boost human development. There is need for government to look for other stable sources of financing infrastructures in Nigeria because the reliance on crude oil revenue has brought about fluctuation in infrastructural development which has negative effect on economic growth. Good example of other sources of financing infrastructures is the recent sovereign Sukuk bond by the Federal government to raise funds through the non interest capital market. The Sukuk issue is targeted at infrastructure development and financial inclusion.

Keywords: Health; Schooling; Human Capital; Economic Growth; Policy Designs

JEL Classification: I15, I25, E24, O40, E61

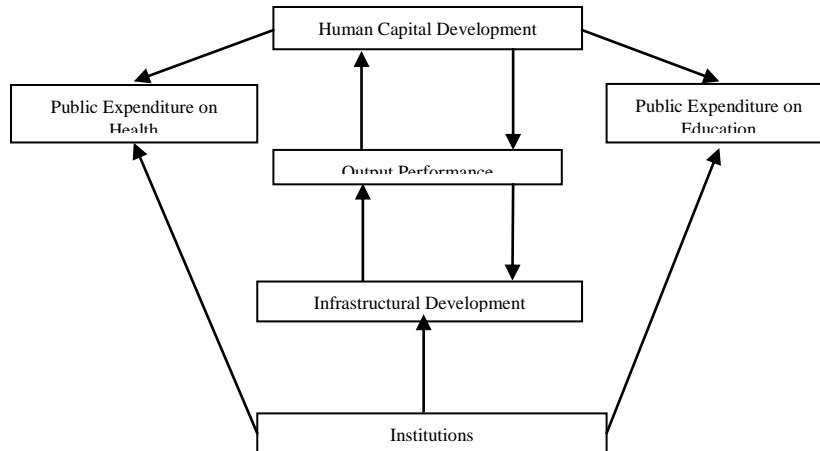
1. Introduction

Human capital contribution to economic growth cannot be over emphasized. Many countries recognize the positive effects of human capital and are making concerted effort to invest in this sector so that the nation can benefit from the development of human resources. (Wolff, 2000). It was opined in the early theories of human capital that investment in training and education serves as a means of developing human capital (Schultz, 1961; Berker, 19664). Attention was drawn to this fact by Lucas (1988) and Romer (1990) through their theory of endogenous growth. In their theory, they proved that, with increased development of human capital, regions and countries should expect a higher level of growth over countries which have a lower developmental rate of

human capital. In another strand of literature, it was observed that human capital development can be improved through effective healthcare services (Oster, Shoulson, & Dorsey, 2013). In the 2013 Human Capital report of World Economic Forum revealed that with effective utilization of human capital as a growth determinant, economic sources are more guaranteed than the utilization of any other resources.

The Sen's capability approach provides the theoretical base for the postulations above (Sen, 1979; 1999) which states that "the capability of an individual to have multiple functioning vectors and to benefit from the attached wellbeing achievement" to be the most preferred welfare indicator. The development analysis shifted because of this perspective, the development analysis shifted to the vector of attributes like education, income, health and also the vector of possible opportunities that might be available to individuals; less choices are available to an individual who is uneducated or starving than an individual who is educated and healthy. The implication of this is that education might not be the only driver for the transformation of an economy. The quality and quantity of investment (foreign and domestic) attached with technological choice, the nature of policies which collectively are the relevant determinants of economic performance. Relevance is attached by the capability approach to the part played by the institutions on the development of human resources (Sen, 1999). As observed by De Muro and Tridico (2008), the connection between human development and institution are complex. This is because human development is a multi-dimensional concept. Developmental policies and institutional policies together make development less uneven, and for all, create even development opportunities so as to improve the living standard. The purpose of development is to enhance the lives of the people through the expansion of individual capabilities such as to be well nourished and healthy, to participate in community life and to be knowledgeable. The fundamental focus of development, therefore, is to remove obstacles that limits the capabilities of individuals, these include ill health, illiteracy, lack of political or civil freedom, lack of access to resources (Sen, 1999). The diagram below depicts human development potential drivers.

Figure 1.1: Potential Human Capital Development Drivers



Source: Adapted from Shuaibu and Oladayo (2016)

From figure 1.1 above it can be observed that welfare is impacted by attainment of education through labour capacity improvement on the aggregate output. Public spending inclusion on education has been pursued in many empirical studies (Pelinescu, 2015; Maazouz, 2013). Public spending on health care and education are expected to have a positive impact on human capital through economic performance. The development of human capital is positively influenced by institutions through its impact on the fiscal policy discipline and also as efficient channel for resources which are directed towards the development of infrastructure (Shaibu & Oladayo, 2016). Quality institutional structure plays a significant role in enhancing the capabilities of the people and also the rate of productivity in the country. This is observed to be so because effective institutional structure creates equitable opportunities for development (De muro, Tridico, Balcerza & Pietzak, 2016). Through the provision of relevant and indispensable services, infrastructure can have a direct significant impact on the development of human resources. This direct impact could be through services such as electricity and drinking water; it could also have indirect impact which could be experience through the enhancement of economic growth, creating opportunities for new income to be earned for the vulnerable group in the society and also strengthen governance (Sapkota, 2014). The two most important sources of human capital are education and health; health capital and knowledge capital. As a matter of fact, these two variables are the major determinants and also the most needed factors for economic development and growth. In Nigeria, and as in other developing countries, it is rather unfortunate that the state of health services in the country and other health infrastructure are in devastating state. For instance, the public expenditure expressed as the percentage of the total health expenditure increased from 25.03% - 29.11% between 2005 and 2009. Its peak was reached between 2005 and 2009 with the accompanying percentage value of 32.62% and dropped to 29% between 2010 and 2014. Again, the value of public expenditure on health increased marginally to 3.57% and 3.63 in 2015 and 2016 respectively (WHO). The poor performance of the value of public health expenditure which is one of the indicators of human capital development is in view of Schultz (1999) submission, that many countries in Africa, including reports from Nigeria indicated that the country has weak education and health indicators as compared with many other places around the world.

In the past, many governments in the country have adopted various plans for development which include 7 Points Agenda, Vision 2010, National Economic Empowerment and Development Strategy (NEEDS), Millennium Development Goals, Vision 20:2020 and one which is recently drafted, Economic Recovery and Growth plan (ERGP). The ERGP is structured to be a medium term developmental plan with primary focus of restoring growth, human resource investment, and charting the course for a competitive global economy. These are in order to allow the people and the nation to progress and achieve the needed economic development and growth. Despite the cumulative policy efforts of over 50 years, indicators of human capital development such as rate of life expectancy, education expenditure by the public sector, enrolment in primary education and expenditure on health by the public sector remains abysmally low. For example, in educational attainment, the country ranked 118th with a male to female ratio of 0.85 for literacy, 0.86 for the enrolment in secondary school, 0.85 for primary and 0.55 for tertiary (Human Development Report, 2009). Moreover, it is dismal to note that Nigeria is the third poorest country in the world with over 80 million populations living below the poverty line (Global Wealth Report, 2015). More recently, Nigeria has been named by the world poverty clock as the world poverty capital. According to the world poverty clock in June, 2018, eighty-seven (87) million people are living in poverty and worst still, the amount of the extreme poor in the country has increased to 91.6 million. Half of the population in the country, by implication, is extremely

poor. Despite increase in the rate of investment in the country with respect to educational and health sector, the domestic economy is still regarded as underdeveloped as it is clearly observed by the indicators and indices of the human development; 2018 statistical update.

Table 1.1 presents the HDI trends in Nigeria based on the new goal post and the data of the consistent time series.

Table 1.1. Nigeria's HDI Trend Based on Consistent Time Series Data and New Goalpost

Years	Life Expectancy at Birth	Expected Years of Schooling	Mean Years of Schooling	GNI Per Capita (2011 PPP\$)	HDI Value
1990	45.9	6.7	N/A	2,792	N/A
1995	45.9	7.2	N/A	2,569	N/A
2000	46.3	8.0	N/A	2,451	N/A
2005	48.2	9.0	5.2	3,669	0.465
2010	50.8	8.4	5.2	4,862	0.484
2015	53.0	10.0	6.0	5,527	0.527
2016	53.4	10.0	6.2	5,326	0.530
2017	53.9	10.0	6.2	5,231	0.532

Source: UNDP 2018 Statistical Update

Table 1.1 reviewed the progress in Nigeria with respect to each of the indicators of HDI. Between 1990 and 2017, there was an increase in the Nigeria life expectancy at birth by 8.0 years, there was also an increase in the mean years of schooling by one year, the expected years of schooling increased by 3.3 years. There was an increase in the GNI per capita of the country by 87.4 percent from 1990 – 2017. On the same note, the HDI value for Nigeria in 2017 was 0.53 which put the country in the category of countries with low human development, making Nigeria, out of 189 ranking 157. The value of the human development in Nigeria increased between 2005 and 2017 to 0.532 from 0.465, this is an increase of about 14.4%. The progress of human development in Nigeria, as measured by the human development index can usefully be used for comparison with other countries. For example, a different degree of progress was actualized by Cameroon and Mauritania towards the increase in their Human development index. See Table 1.2 below.

Table 1.2: Nigeria's HDI and Component Indicator for 2017 Relative to Selected Countries

	HDI Value	HDI Rank	Life Expectancy at Birth	Expected Years of Schooling	Mean Years of Schooling	GNI Per Capita (PPP US\$)
Nigeria	0.532	157	53.9	10.0	6.2	5,231
Congo Democratic Republic	0.457	176	60.0	9.8	6.8	0,796
Ethiopia	0.463	173	65.9	8.5	2.7	1,719
Sub-Saharan Africa	0.537	-	60.7	10.1	5.6	3,399
Low HDI	0.504	-	60.8	9.4	4.7	2,521

Source: UNDP 2018 Statistical Update

From the table above, the 0.532 value of the human development index of Nigeria is higher than the average which was 0.504 for countries that are in the group for the low human development index, also the value is below the average for the countries that are in Sub-Sahara Africa. Countries that are close to Nigeria from Sahara African in the 2017 HDI rank are Ethiopia and DR Congo, in which their respective HDI ranks are 173 and 176. Motivated by the data, this study simultaneously explored several institutional and structural factors that can influence the development of human capital and its policy implication for domestic growth in the country. This implies that a step by step account of the factors that determines human capital development in words of Sidikat, Gafar, Mukaila and Samsudeen (2006) must be examined in order to give direction for policy reforms. Anything short of this implies that policies will be formulated blindly without the knowledge of which factor is stronger at improving human capital development; implication for the growth in the Nigerian economy.

2. Literature Review

2.1. Conceptual Issues

Concept of Human Capital Development

The classical school in 1776 is regarded as the root of the development of human capital as a concept. Human capital, as postulated by Schultz (1961) is one of the significant production factors that holds a significant role in the development of an economy. According to him, human capital is the stock of knowledge of production and skills which are possessed by workers to increase productivity. Human capital is also regarded as an important variable in improving the employees and assets of firms so as to increase the level of productivity and to equally sharpen the competitive advantage of the firm. Human capital is regarded as a tool which is used as an edge over other firms because it involves training, acquisition of knowledge, initiatives and many others. All these are for the acquisition of skills. The development of human capital is centred on the human because its main concern is connected to the empowerment of human which is expected to result in active participation. OECD (2001) observed that human capital is concerned with skills, knowledge, attributes and competitiveness which are embedded in an individual which influences the creation of social, personal and economic wellbeing.

2.2. Theoretical Literature

The Romer Endogenous Growth Theory

The model starts by assuming that the process of growth which is derived from the industry or the firm level. Each individual in the industry produces with constant return to scale, the model, therefore, is consistent with perfect competition and this seems to be similar to the Solow model assumption. The difference in the two model is that the Romer assumption postulates that the economy with the capital stock K affects the output positively at the industry level, in order to have increasing return to scale at the economy.

It is important to note that knowledge is part of the valuable capital stock of an industry. The firm's capital stock which includes knowledge is an important public good, as observed in the Solow model where there are spill over to the other firms in the economy. due to this, learning is treated in the model as learning by investing. The Romer model can be thought of as spelling out- endogen zing-the reason why the rate of investment determines the growth rate. From this simplification, abstract is drawn from the household sector, which is an important characteristic of the original model, this is carried out so as to focus on issues that relates to industrialization. Formally,

$$Y_i = AK_i^\alpha L_i^{1-\alpha} K^\beta \dots\dots\dots 1$$

For simplicity the study assumes symmetry industries, with this, the same level of labour and capital is utilized by each industry. We then have an aggregate production function:

$$Y = AK_i^{\alpha+\beta} L_i^{1-\alpha} \dots\dots\dots 2$$

In order to make the endogenous growth stand out, the study assume that A is constant instead of increasing over time; this means that the study assume for the mean time that there is no progress in technology. It can be shown, with little calculation, the per capita growth rate in income in the economy is going to be

$$g - n = \beta n / (1 - \alpha - \beta), \dots\dots\dots 3$$

G in the model above is the rate of output growth and n is the rate of population growth. As in the Solow model, without spillover and constant return to scale $B=0$ and per capital income therefore will be zero. Romer model, however, assumes that combining the three factors including the externality of capital, $B>0$; thus $g-n>0$ and Y/L is growing. Endogenous growth is now created, not exogenously driven by productivity increases. If technological progress is allowed in the study, in such a way that in the Solow Model $\lambda > 0$, the rate of growth will increase to the same level. The Model of Romer functions at a very high level of abstraction. In as much as the limits of the older mathematical models were overcome a number of simplifying assumptions were made in his model if mathematics were to be managed for the production of result. One of the assumptions in the model is that supply and the population of labour is constant, the other is that the total human capital stock is fixed and the fraction of labour which is supplied to the market is equally fixed. It is important to note that neither of those assumptions is true.

Human-Capital Augmented Solow Model

As observed from the Solow model, the Mankiw/Weil/Romer introduced human capital with the simplest method possible. With the Solow model, they presented a simple extension with their influential contribution by introducing human capital as a separate input into the standard production function of Cobb Douglas with Harrod-neutral technological progress. The following form is taken in the model by the production technology is known as the human capital augmented Solow model.

$$Y_t = K_t^\alpha H_t^\beta (A_t L_t)^{1-\alpha-\beta}$$

In the model above, output is designated Y, the stock of human capital is H, capital is designated as K, the technological level is represented as A and L is raw labour. The exponents α, β and $1 - \alpha - \beta$ is adopted in the study to measure the output elasticity to their corresponding inputs. Mankiw/Weil/Romer in the model assumes that $\alpha + \beta < 1$, in order for constant return to scale to be exhibited by the function and diminishing return to reproductive factors. Just as observed in the Solow model, the technological level and the population increase at the exogenous rate g and n respectively, on the other hand, the depreciation of capital at the rate δ . Three (3) other relevant assumption were made by Mankiw/Weil/Romer, these assumptions include; Just as people invest in physical capital they also invest in the human capital; this means that, by sacrificing consumption and spending a fraction of their income towards human capital accumulation; That is, at the same constant rate, there are depreciation of

human capital just as there are in the physical capital; That output can be adopted either for investment or for consumption in capital.

Summarily, the Solow model augmented human capital deals with human capital as an additional input in the production process. Just the way physical capital is modelled, the human capital is exactly modelled same way. To accumulate the human capital, a fraction of income is invested in its production and it depreciates at the same level as physical capital.

2.3. Empirical Issues

An investigation was carried out by Ravallion (1991) on the impact of expenditure by the public sector on social services such as health services, infrastructure, and education on the development of human capital. The relationship of public provision of the social services as it relates to the development of human in developing nations was examined using several indicators such as health, education as human development proxy. The research findings from the study revealed that the expenditure by the public sector as it relates to the provision of social services had a good relationship with the development of human capital.

Bildirici, Orcan Sunal and Aylac (2005) carried out an analysis on the relationship between brain drain and capital growth in 77 countries. The study adopted the panel data which was obtained from 1999 – 2001 by employing ordinary least squares technique. From the study it was observed that growth is increased in developed countries through migration of people, but growth is slowed down in less developed countries. From the result it was also observed that adult literacy, index for education, schooling rate, per capita income, investment in education, average life expectancy and the rate of growth are significant and positively related to the human capital particularly in the countries that were studied.

Oketch (2005) in his study investigated the determinants of economic growth and human capital formation in African countries. This study was carried out by identifying the two-way link which exist between economic growth and the development of human resource which is produced through formal school, measured in terms of per capita, and between investment in growth and in physical capital. Estimates was carried out in the study in three structural system of equation by two stage least squares. In the study it was concluded that the source of labour productivity growth in African countries are high investment in human and physical capital. This research conclusion is similar to the study hypothesis that both physical and human investment is important if the continent is to reach industrial development.

Sidikat, Gafar, Mukaila and Samsudeen (2006) examined human development determinants in Sub-Sahara Africa. A set of cross country data and multiple regression was adopted in the study. The study result indicated that factors such as conflict, natural disasters, instability, external debt crisis and prevalence of HIV and the lack of access to water all negatively impacted on the development of human capital in the region. Consequently, the study recommended measures such as the provision of human security, human empowerment, and provision of stable macroeconomic policies, foreign debt forgiveness, fight against corruption and the prevention, management and treatment of HIV/AIDS as possible solution to human development in SSA.

Olanrewaju (2011) explored the child schooling determinants in the country. The measures of schooling outcome adopted in the study are school current enrolment and delayed enrolment. The reduced form relationship was adopted in the study for the male and female children within the rural and the urban households. The data collected for the study is the multiple indicator cluster survey of Nigeria, it was observed in the study that socioeconomic backgrounds of children are significant determinants of schooling with education of parents which is observed to be the most

important determinant. More schooling is desired for the children by the educated parents. From the decomposition analysis, it was observed that the way girls and boys are being treated in the household in the urban region contracts the gender gap in the enrolment, however this gap is widened in the rural areas.

Azhar and Hafeez (2012) carried out a study on the regional difference in the human capital; the Pakistanian case was examined by providing a descriptive analysis in different region regarding the human capital. For the four provinces of Pakistan, the study categorised 3 human capital such as urban, rural and overall are formed. Visible difference was observed in the study of the human capital situation between the urban and the rural areas in Pakistan. It was suggested in the study that human capital can be improved through the investment for the improvement of skills of workforce which will lead to the increased productivity of capital. This therefore means that more funds should be allocated to education and health sectors particularly in the rural areas for the development of human capital in the area.

Popescu and Diaconu (2014) examined the human capital determinants in Romania. A representative sample of 300 persons was collected from the North-eastern part of Romania. The determinants which were found in the study to be influencing the human capital includes work professional experience, the country specific, formal education, lifestyle, the state of health in the country.

Iyoboyi and Muftau (2014) in their study titled an assessment of the development of human capital in Nigeria through education utilized education as a proxy to examine human capital. In the study, secondary sources of data were adopted. These data were analysed with the aid of basic statistics. According to the study report, evidence was obtained that there are inadequacies of human capital development in the country and it is observed to be unable to galvanize the nation towards long term growth. The study concludes that it is important to lay emphasis on developing human resources in the country, this is with a specific reference to the country's system of education if the goal of generation of employment, alleviation of poverty and creation of wealth are to be reached.

Shobande, Odeleye and Olunka (2014) worked on human capital investment and economic development in Nigeria. The period covered in the study is from 1970 – 2011. In the study OLS method of analysis was employed, this also includes ADF, Johansen test of cointegration, Error correction method for the data analysis. It was observed in the study that a short run negative relationship exists between human capital investment and economic development in Nigeria. Research findings were considered significant because it is relevant to the present study as the findings were as expected.

Simko (2015) conducted a study on the human capital determinant. The Swedish municipal was studied by creating an index for the human capital which is based on creativity, education and health. In the study, the cross sectional regression was adopted and a very interesting result was obtained. The determinant which was observed to have the biggest impact on the human capital was cultural diversity which was closely followed by specialization in knowledge based on manufacturing.

An investigation was carried out by Jaiyeoba (2015) on the relationship between investment in health, education and economic growth in Nigeria. The study utilized time series data from 1982 – 2011. In the study, Johansen cointegration, trend analysis, OLS method was adopted. The study employed data on education and health expenditure, tertiary and secondary enrolment and the gross fixed capital formation. It was observed from empirical findings that a long run relationship

exists between the expenditure of government on health education and economic growth. The study recommended that policies should be structured by the authorities towards large scale investment in health and education.

3. Methodology

3.1. Model Specification and Data presentation

The study adopted a model which is predicated on the theoretical exposition of Mankiw, Weil, Romer (1992) and a modified model of Osoba and Tella (2017). The study model is slightly structured differently from the above mentioned in that the present day study takes into consideration the role of institutions and infrastructural development as the main drivers of the development of human capital. Based on the foregoing, the relationship existing between the development of human capital and economic growth is specified thus;

$$RGDP = f(HCD, PEE, PEH, INFRAS) \dots\dots\dots 4$$

Where:

RGDP = gross domestic product which is adopted as a proxy for economic growth

HCD = Human capital development proxied with human development index;

PEE = Public expenditure on education;

PEH = Public expenditure on health;

INFRAS = Infrastructure and this is captured by electricity consumption per capita (kWh);

In this study, the role of institution holds in the development of human capital is examined. Thus, equation (3.2) is modified to include a dummy variable as specified below:

$$RGDP = f(HCD, PEE, PEH, INFRAS, DUM) \dots\dots\dots 5$$

To estimate equation (3.3), we take the natural logs of both sides which will result in the following equation (3.4)

$$\ln RGDP = \beta_0 + \beta_1 \ln HCD + \beta_2 \ln PEE + \beta_3 \ln PEH + \beta_4 \ln INFRAS + \beta_5 DUM + \mu \dots\dots\dots 6$$

The dummy variable accounts for the role of institutions as major drivers of human capital development. Dummy 1 for years in which Nigeria had democratic governance and 0 for otherwise. Where μ denotes the white noise error term, In: logarithm, β_0 = autonomous parameter estimate and $\beta_1 \dots \beta_5$ = estimates of the parameter associated with the determinants of the development of human capital in Nigeria. Except the dummy, every variable in the model are expressed in logarithmic form. Also, every coefficient is expected to be positive. Secondary source of data was adopted in the study which were collected from the CBN bulletin, NBS and world development indicators. The data collected covers the period of 1981 – 2017.

3.2. Variables Justification

The development of human capital is measured by human development index and in the study it is expected to have a positive effect on the economic performance in Nigeria. In the steps of Bidirici et al (2004), it is expected that there will be a positive relation between human capital development and economic performance.

PEH and PEE respectively means public expenditure on health and public expenditure on education. These two input parameters are important for the sustenance of economic growth. Educational and health sector captures the impact of domestic absorption on economic development. The apriori expectation for the study is that there will be a positive relationship between economic growth and health expenditure and education expenditure (Mankiw, Romer,

Weil, 1992). In regards to measurement, the total expenditure on both sector was adopted in the study.

INFRA implies Infrastructure and electricity consumption per capita kWh is captured by this. The apriori expectation in regards to this variable is that it will be a positive function to growth (Sakota, 2014). In addition, with the complete assessment of state provided infrastructural facilities it is equally an important criterion for the development of human capital. As Ward (1999) observed, infrastructural services includes, roads, electricity, water and these are all important because social and economic infrastructure are important overheads that are key to economic growth.

Another precondition for the improvement of development of human capital is the presence of good governance and by extension economic growth. For instance, Sandstorm (1994) opines that good governance is reflected in the responsibility of the government to involve its citizens in the development decision that will affect their lives. Furthermore, accountability, transparency and openness is the responsibility of the government so as to be held responsible for their individual and collective actions and enhance the maximization in resource utilization (UNDO, 2000).

3.4. Estimation Technique

To carry out investigation on the existing relationship between the explanatory variables and the dependent variable, the following procedures were adopted by the study.

First, an investigation was carried out on the time series characteristics. The reason for this investigation is to determine the integration order. The study conducted ADF test on the variables which were used in the regression. This was carried out so as to know the integration order of the underlying series. The determination of the underlying properties is the objective, and to observe the process that generates the results and discuss the analysis accordingly afterwards conclusion will be presented based on the employed time series variables. The study further estimated economic growth equation using a similar methodology employed by Osoba and Tella (2017). Empirical test in the literature used various econometric specification with the associated econometric problems. Econometric problem like variable omission, bias, and non stationarity have not been taken care of to varying degrees in subsequent research as the studies on the country's development of human capital-growth nexus are scanty and few to the best of our knowledge. To overcome the issue of endogeneity/ simultaneity bias, the study adopted the dynamic OLS estimator which was engineered by Stock and Watson (1993). The DOLS estimator of the cointegrating regression therefore combines all variables in the level, in addition to lags and leads of values of the explanatory variables.

The DOLS approach is important and useful due to its ability to introduce dynamics in the specified model while controlling for bias in the model. Accordingly, the problem of endogeneity is anticipated which can make the estimated coefficient to be bias if it is not accounted for in the estimation procedure. To control this problem, estimation was carried out by OLS using the Newy and West (1987) Heteroscedastic and Autocorrelation Consistent covariance matrix estimator, it is observed that their standard errors are robust, ensuring the validity of the inferences which are made regarding the coefficients of the variables entering the regressors in levels. Eviews9.5 package was consequently employed to estimate the model. This is done by including 3 lags and 1 lead in the regressors.

4. Results

4.1. Time Series Properties of the Variables

It has been observed in econometric studies that macroeconomic and financial time series variables are non-stationary and usually non-stationary variables results into spurious regression result (Engel & Granger, 1987). Hence the stochastic properties of the variables were investigated using the ADF and the Philip perron tests. These test were adopted in the study to test for the consistency in the data and decide the best method to use in the study.

Table 4.1: Unit Root Test Result (Trend and Intercept)

Variable	ADF	Critical Values	Order of Integration	PP	Critical Values	Order of Integration
RGDP	-5.945	-4.297*	I(0)	-13.639	-4.244*	I(1)
HCD	-5.154	-4.253*	I(1)	-5.005	-4.244*	I(1)
PEE	-4.957	-4.356*	I(1)	-8.795	-4.244*	I(1)
PEH	-4.148	-4.297*	I(1)	-6.610	-4.244*	I(1)
INFRAS	-7.754	-4.244*	I(1)	-7.898	-4.244*	I(1)
DUM	-5.827	-4.244*	I(1)	-5.829	-4.244*	I(1)

NB: * Indicate stationary at the 1percent level and ** stationary at 5percent level

Source: Researchers Computation, 2019.

From the above table it can be seen that the ADF result suggest that the variables are non-stationary at level. They however appear to be stationary after first differencing them. Also the result of the PP revealed that the variables are non-stationary with the exception of RGDP variable which was seen to be stationary at level. All the variables however became stationary after first differencing them. The variables that were stationary were then used for the analysis. Next, the study presented the regression result which has been estimated from the Dynamic OLS.

Table 4.1: Results of DOLS Estimated Equation Dep Var = LOG (RGDP)

Variable	Coefficient	t-values	p-value
C	26.613*	4.619	0.00
LOG(HCD)	11.401*	5.452	0.00
LOG(PEE)	-0.591	-1.460	0.15
LOG(PEH)	0.354	0.866	0.39
LOG(INFRAS)	0.199	0.208	0.83
DUM	0.007**	4.619	0.01
R ²	0.84		
SER	0.994722		
Long-run variance	0.974185		

Note: *, showing significance @ 1 percent and ** 5 %. Each p-value is reported in square bracket.

Source: Researcher's Computation (2019).

From the above table it can be observed that the estimation equation depicts that long run significant determinants of economic growth are mostly from the development of human capital, public expenditure on health, infrastructure and democratic governance. In regards to the independent variables, the estimated coefficients and the corresponding t- statistic of the human capital development, public expenditure on health, infrastructures and democratic governance all acquired the expected signs, hence meeting up with the study apriori expectations of positive relationship. When viewed statistically, however, only human capital development and democratic governance captured by the dummy contributes to economic growth statistically. The corresponding t-value and the coefficient estimates of expenditure on education do not have the expected sign, by implication, this study finding is not consistent with the study expectation of positive relationship between economic growth and the expenditure on health.

The positive signs of variables like human capital development, public expenditure on health, infrastructures and existence of democratic governance, are clear indications that these variables matter with respect to economic performance. Expenditure on education is not really that relevant to the study outcome. This is because it negates the study a priori expectations. Factors such as, policy inconsistency, corruption, and political irregularities may account for this unexpected outcome. The goodness of fit of the DOLS estimate is adequate. About 84% in the variation in economic growth is due to changes in the regressors.

5. Conclusion and Recommendations

The two indispensable sources for the development of human resources are education and health; health capital and knowledge capital. But these indicators of human capital development in Nigeria have shown very poor outcomes. In view of this, Schultz (1999) noted that many countries in Africa, including Nigeria recorded weak education and health indicators as when compared with other countries in the world. This therefore means that it is important that the human capital be developed as it has been regarded as the engine of growth and development. It is against this background that the study attempted to offer a step by step examination of the factors that determines human capital development in order to proffer direction for policy reforms, if not policies will be formulated without complete understanding of the factors that are stronger in improving the development of human capital; economic growth policy implication in Nigeria.

The Dynamic Ordinary Least Squares (DOLS) was adopted as analytical technique. The estimated Dynamic OLS regression equation revealed that the long-run significant determinants of economic growth is largely from human capital development, public expenditure on health, infrastructures and democratic governance. But when viewed statistically, only human capital development and democratic governance captured by dummy contributes to economic growth statistically. The research therefore suggested provision of sectoral policies, that are not only for the development of the people but to also create money making opportunities and enhance welfare that are required for the development of the people. The Nigerian policy direction therefore needs to be focus on the reversal of the perceived infrastructural deficit, in such a way that the country will experience steady and stable economic development. Specifically, there is every need for government to search for alternative finance sources for the building and provision of infrastructural facilities in the country, this is because the reliance on crude oil revenue has brought about fluctuation in infrastructural development which has cause instability and brought negative effect on the growth of the country. Good example of other sources of financing is the recent sovereign Sukuk bond by the government to pull funds through the non interest capital

market. This issue is targeted at the development of infrastructure and financial inclusion in Nigeria.

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Electricity Supply and Economic Growth in Nigeria: A Bounds Testing Co-integrative Approach

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Abstract

The paper examines empirically, whether or not electricity supply and investment in electricity impact significantly and positively on economic growth in Nigeria over the sample period of thirty-six year from 1980-2017. The newly developed bounds testing approach to co-integration was adopted in the study. The results obtained reveal that both the short-run and long-run growth effects of electricity supply in Nigeria are significant and positive. Having ascertained the significance of electricity supply positively influencing economic growth in Nigeria, the study thus recommends a set of policies to the Nigerian government with a view to enhancing electricity distribution and fostering economic growth in Nigeria.

Keywords: Electricity Supply, Economic Growth, Bounds, Co-integration, Investment

JEL Classification: C32, Q43, O47

1. Introduction

Electricity is a flexible form of energy and critical resource for modern life and a vital infrastructural input for economic development. In all economies, households and companies have extensive demand for electricity. This demand is driven by such important factors as industrialization, extensive urbanization, population growth, rising standard of living and even the modernization of the agricultural sector. Nigeria is considered as one of the energy rich country in the world and rated among the top oil producers in Africa, second in natural gas reserve (with an estimate of 176trillion cubic feet) and estimated 2 billion metric tonnes of coal (Adeyemi & Ayomide, 2013). Nigeria is also rich in water, wind and sun energy from which appreciable electricity can be generated (Akinlo, 2009). With the abundance of energy resources, Nigeria need not import energy to achieve a sustainable generating capacity to suffices the targeted economic growth and also has excess generation to sell to neighbouring countries. With a population of over 180 million people, it is endowed with enormous energy resources, such as, petroleum, natural gas, coal, nuclear, tar sand. Others include solar, wind, biomass and hydro (Anaeke, 2010).

However, development and exploitation of such energy sources have been skewed in favour of the hydro, petroleum and natural gas. At independence in 1960, agriculture was the dominant sector of the economy contributing about 70%. This trend changed with the discovery of oil in 1970. It has one of the largest natural gas reserves globally, with an estimated 182 trillion cubic

feet of proven reserves. And with abundant levels of daily solar radiation, estimates suggest that the country could generate approximately the daily energy equivalent of the energy from a 192,000 megawatt (MW) gas power plant working at full capacity for 24 hours a day (Akinlo, 2009).

However, consistent under-investment in capacity, sub-standard maintenance of power assets, and poor management of resources, gross inefficiency and corruption mean that power consumption per capita is one of the lowest in the world. As a consequence, individuals and businesses pay huge amounts to access electricity, adding up to 40% of the cost of doing business. This has a serious impact on Nigeria's competitiveness (Siyan & Ekhaton, 2001).

The epileptic nature of electricity has increased consumption of petrol and kerosene because the citizens have resorted to using generators and kerosene powered equipment to provide energy for use at homes. Also, import content of our domestic fuel usage has grown over the years to about 75% (International Energy Agency, 2012). This has resulted in the use and overdependence on fuel-wood which has led to deforestation and attendant degradation of the environment and worsening desertification (Babanyara & Saleh, 2010). Babanyara and Saleh, (2010) report an average annual deforestation rate of 2.38% between 1990 and 2000 in Nigeria due in part to the change to the use of wood fuel as a result of hikes in prices of kerosene and cooking gas.

Past attempts to reform the power sector have failed to live up to expectations and substantial government under-funding for both complimentary capital projects and routine maintenance operations resulting in huge transmission losses. The objective of this paper is to examine the empirical impact of electricity supply and investment in electricity on economic growth in Nigeria. What are the implications of electricity supply and investment in electricity supply on economic growth? We asked this question because electricity supply is an important variable of economic growth. The paper is divided into five sections. After this introduction, section 2 is a brief review of previous studies. Section 3 contains data and methodology. Section 4 is the result and discussion and section 5 draws the conclusion and recommendations.

2. Literature Review

Previous studies had investigated relationship between GDP and aggregate energy consumption or total electricity consumption. Siyan and Ekhaton (2001) argued that the installed capacity of electricity in the 1980s was about 6000MW but by 1990, the available installed capacity dropped to less than 2000MW and has continued to drop since then. Some of the plants which were available in 1980s were no longer available by 1990. Some of the reasons for the continued drop included inefficiency and corruption. In 1980, there were a total of 76 installed units with total capacity of 6000MW, but by 2001 only 22 units were available with total capacity of 2716.6MW and actual capacity generated being 2278MW. There was 338.6MW of generation loss from available capacity. By 2011, the installed capacity rose to 8644MW, but the actual capacity was put at 3200MW (Latham & Watkins, 2011).

Asafu-Adjaye (2000) investigated the existence of causal relationship between energy consumption and output in four Asian countries using the co-integration and error-correction mechanism and pointed out that unidirectional causality ran from energy consumption to output in India and Indonesia. However, bi-directional causality was found in case of Thailand and the Philippines. Akinlo (2009) conducted a study in Nigeria to investigate relationship between economic growth and electricity consumption during the period 1980 to 2006. The result exhibits that there is unidirectional Granger causality running from electricity consumption to real GDP and suggested use of electricity could stimulate the Nigerian economy.

Mojekwu and Iwuji (2012) carried out a study using time series analysis using a data of 1981-2009 to examine the impact of power supply, inflation rate and interest rate on capacity utilization rate in Nigeria. Data analysis was carried out using ordinary least square multiple regression technique. To improve linearity, they used log values of the variables. They concluded that electricity supply has a significant positive effect on capacity utilization at 5% level of significance, while inflation rate and interest rate had negative impact, the impact of interest rate was found to be significant at a p-value of 0.212 and 0.039 for f statistic and x-square statistic respectively. They found the impact of inflation to be negative but not significant at 5% level.

Study conducted by George and Oseni (2012) spanning 35 years from 1970-2005, found that total electricity supply to the industrial sector was not only less than the total going for residential use but was declining. Their study showed that the major driver of unemployment in Nigeria was attributed to insufficient and unreliable power supply to the industrial sector. Gado and Nmadu (2011) over a study of 14 years showed a strong positive correlation between electricity supply and capacity utilization in textile industry in the northwest zone of Nigeria. They concluded that the electricity sector in Nigeria needed emergency attention. Esso (2010) examines the long-run causality relationship between energy and economic growth for 7 sub-Sahara countries over the period 1970-2007 and applying bounds testing approach to cointegration, the findings suggest unidirectional relationship between GDP and energy consumption for all countries, while the result of causality indicates bidirectional relationship between energy consumption and real GDP in the case of Coted'Ivoire and unidirectional causality from real GDP to Congo. Justifying the first hypothesis on the basis of panel data from 158 countries for the period 1980-2004 and employing semi-parametric partially linear panel model, Von (2009) reports energy consumption leads to increase in economic growth and the effect of time trend is not significant.

In addition, Nondo and Kahsai (2009) applied the same techniques of panel unit root tests, panel cointegration and panel error correction model to estimate the causal relationship between energy consumption and economic growth for 19 COMESA countries for the period 1980-2005. Their analyses reveal that causation running from energy consumption to economic growth for low income COMESA countries. Olaniyan (2010) on the basis of panel data of 5 West African countries for the period 1970-2005 and employing Granger causality tests and cointegration analysis, the results show energy consumption does not cause economic growth suggesting that individual efforts may be inadequate; rather, regional cooperation to lower oil prices, increases access to cheaper renewable energy sources as well as increased intra-region energy trade should be encouraged.

Again study conducted by Pradhan (2010) using the time series data from China for the period 1970-2007 and applying production function and causality approach, he finds unidirectional causality from economic growth to energy consumption with infrastructure and transport as additional variables which also reports unidirectional causality as well. Employing different methodology and different time period for China, Shunyun and Donghua (2011) examines the causality between energy consumption and economic growth for the period 1985-2007 within a multivariate framework by applying fully modified OLS (FMOLS), the results indicate the presence of bidirectional relationship and economic growth which contradicts the findings of Pradhan (2010). Similarly, Viahinic-Dizdarevic and Zikovic (2010) apply the technique of error correction model (ECM) to investigate the role of energy consumption in economic growth from Croatia for the period 1993-2006, their results support unidirectional hypothesis. Khan and Qayyum (2007) using time series data of South Asia for the period 1972- 2004 and applying autoregressive distributed lag (ARDL) technique, the results support the evidence of causality

running from energy consumption to GDP in all countries in the long-run as well as in the short-run. However, a similar study by Zachariadis (2006) using panel data for the 5 OECD countries for the period 1965-2004 and applying different modern econometric methods (VEC, ARDL and VAR), discovers the aggregate energy use is granger caused by GDP. But differences in methods and datasets do not allow for a more in depth analysis. On the contrary, using the Leveraged Bootstrap Simulation technique on time series data from Sweden for the period 1965-2000, Abdunnasser and Manuchehr (2005) find that energy consumption does not cause economic activity but rather it is caused by economic activity. Erbaykal (2008) using time series data for the period 1970-2008 for Turkey and employing Bounds test approach, the findings suggest that in the short run both oil and electricity have positive and statistically significant effect on economic growth, however, in the long run oil consumption has positive effect on economic growth while electricity has negative effect.

3. Methodology

3.1. Data

The empirical analysis of the study is conducted by using time series data of total Electricity supply, total real Gross Domestic Product (GDP) and total investment for the period spanning from 1980 to 2016 sourced from Central Bank of Nigeria Statistical Bulletin (CBN, 2017) and World Development Indicators (WDI, 2017) of the World Bank. The choice of the starting period was constrained by the availability of time series data on electricity consumption and other control variables. The data of total electricity consumption is expressed in terms of Gigawatt hours (GWh) and obtained from annual report, published by National Bureau of Statistics. We used the GDP as the proxy for economic growth, which is a common choice in literature.

3.2 Unit Root Testing

Since this study deals with time series macroeconomic variables, there is need to test for unit root in each of the variables employed. The importance of this derives from the fact that estimation in the presence of non-stationarity in variables usually leads to biased and inconsistent estimates of the standard errors of the coefficients and this could lead to misleading inference if appropriate technique is not applied to overcome the problem. The unit root tests are carried out using the Augmented Dickey-Fuller (ADF).

3.3 Model Specification

The model of the study is used to determine the relationship between electricity supply and economic growth in Nigeria. Consequently, the model of the study is specified following the lead from Adeyemi and Ayomide (2013). The model is stated below.

$$GDP_t = \alpha_0 + \alpha_1 ELSP_t + \alpha_2 IVES_t + \alpha_3 GCF_t + \alpha_4 PEXP_t + \varepsilon_t \dots\dots\dots 1$$

Where:

GDP = Gross Domestic Product which is a proxy for economic growth.

ELSP = Electricity supply in the economy

IVES = Goss investment in electricity supply in the economy

GFCF = Gross fixed capital formation

PEXP = Public expenditure

α = Regression Coefficients or parameters

ε = Stochastic Error Term

Equation one postulates (hypothesis) that economic growth is positively related to electricity supply, investment, Gross fixed capital formation and public expenditure. All the explanatory variables were tested for significance. The specified equation passed through the multiple

$$\Theta = \begin{pmatrix} \Theta_{YY} & \Theta_{YX} \\ \Theta_{XY} & \Theta_{XX} \end{pmatrix} \dots \dots \dots 4$$

The diagonal elements of the matrix are unrestricted, so the selected series can be either I(0) or I(1). If $\Theta_{YY} = 0$, then Y is I(1). In contrast, if $\Theta_{YY} < 0$, then Y is I(0). The VECM procedure is imperative in testing for at most one co-integrating vector between the regressand and the vector of regressors. Thus, following Pesaran et al. (2001) as in their Case III of unrestricted intercepts and no trends, having imposed the restrictions $\Theta_{YY} = 0, \alpha \neq 0$ and $\phi = 0$, our unrestricted error correction ARDL unrestricted error correction model can be derived as follows:

$$\begin{aligned} \Delta(GGDP)_t + \beta_0 + \beta_1(GGDP)_{t-1} + \beta_2(ELSP)_{t-1} + \beta_3(IVES)_{t-1} + \beta_4(GCFF)_{t-1} \\ + \beta_5(PEXP)_{t-1} + \sum_{i=1}^p \beta_6 \Delta(GGDP)_t + \sum_{i=1}^p \beta_7 \Delta(ELSP)_{t-1} \\ + \sum_{i=1}^p \beta_8 \Delta(IVES)_{t-1} + \sum_{i=1}^p \beta_9 \Delta(GCFF)_{t-1} + \sum_{i=1}^p \beta_{10} \Delta(PEXP)_{t-1} \\ + v_t \dots \dots \dots 5 \end{aligned}$$

Equation (3.3) is ARDL of order (p, q, m, l, j) which holds that economic growth is predisposed to be determined by its own lag, the lag values of growth rate of gross domestic product (GGDP), electricity supply (ELSP), investment in electricity (IVES), gross fixed capital formation (GCFF) and public expenditure (PEXP). The structural lags are conventionally determined on the basis of minimum Akaike’s information criteria (AIC).

From the estimation of ARDL unrestricted error correction model, the long-run elasticities are the coefficients of one-period lag of the regressors (multiplied by a negative sign) divided by the coefficient of the one-period lagged value of the regressand (Bardsen, 1989). Accordingly, as in our ARDL model, the long-run elasticity effects of employment, capacity utilization, gross fixed capital formation and public expenditure are computed as $(\frac{\beta_2}{\beta_1})$, $(\frac{\beta_3}{\beta_1})$, $(\frac{\beta_4}{\beta_1})$ and $(\frac{\beta_5}{\beta_1})$ respectively.

The short-run effects are obtained directly as the estimated coefficients of the first-differenced variables in the ARDL model.

3.5 The Wald Test for Short-run Causality: Zero Restriction Hypothesis

Having estimated our unrestricted error correction ARDL model, the Wald test based on the standard F-statistic was computed to establish the co-integration relationship between the variables in the study. The Wald test was conducted by imposing the following restriction on the estimated long-run coefficients of economic growth, employment rate, capacity utilization as percentage of GDP, and gross fixed capital formation as a percentage of GDP.

$$\begin{matrix} \beta_1 & \beta_1 \\ \beta_2 & \beta_2 \\ \beta_4 & \beta_4 \\ \beta_5 & \beta_5 \end{matrix} \quad H_0: \beta_3 = 0, \quad H_1: \beta_3 \neq 0 \dots \dots \dots 6$$

The null (alternative) hypotheses hold that co-integration relationship does not exist (exist) respectively. The computed Wald statistic adjudged significant or insignificant on the basis of the critical values tabulated in Pesaran et al. (2001).

4. Results

Table 1: Augmented Dickey-Fuller Unit Root Test.

Variables	Constant		Constant & trend		None	
	Level	FD	Level	FD	Level	FD
GDP	-1.1153	-10.2656*	-1.9762	-10.2303*	-0.4156	-10.2711*
ELSP	-1.9229	-4.7717*	-0.4333	-5.1114*	1.7172***	-4.7688*
IVES	-1.2706	-10.2334*	-2.1328	-10.2345*	-0.0436	-10.2213*

FD signifies First Difference. *, ** and *** denote significance at 1%, 5% and 10% respectively

Source: Authors' computation

From Table 1, it is obvious that all the variables are integrated of order 1 or 1(I). In other words, all the variables are said to be stationary at first difference. Therefore, we can safely conclude that first differencing is sufficient for modeling the time series adopted in this study.

Table 2: Bounds Results

Regressor	Coefficient	t- value
Constant	4.095*	25.605
Log (GGDP-1)	0.0269*	13.436
Log (ELSP-1)	0.826*	4.662
Log (IVES-1)	-0.002	-0.228
Log (PEXP-1)	1.052***	2.999
Log (GCFF-1)	1.228	5.656
<i>Panel B: Short-Run Estimates</i>		
Δ Log (GGDP)	0.224***	2.688
Δ Log (GGDP-1)	0.556*	4.082
Δ Log (ELSP-1)	0.426***	2.255
Δ Log (ELSP-2)	0.222***	2.856
Δ Log (PEXP-1)	0.244	1.452
Δ Log (PEXP-2)	0.244***	2.652
Δ Log (GCFF-1)	0.698*	2.226
Δ Log (GCFF-2)	1.062	9.466
<i>Summary Statistics</i>		
R ²	0.683	
Adj R ²	0.625	
Sum of Squared Residuals	0.0066	
Standard Error of Regression	1.0222	
F-Statistics	15.998	

Note: ***, ** denotes statistical significance at the 1% and 5% levels.

Source: Authors' Computation.

Table 3: Bound Testing Approach to Co-integration

Level of Significance α %	Critical Value	
	Lower	Upper
1% Significance*1	3.74	5.06
5% Significance*2	2.86	4.01
10% Significance*10	2.45	3.52
Computed F-statistic: 6.555***		

Note: critical values are cited from Pesaran et al. (2001). Unrestricted intercept and no trend.

Refers to the number of estimated coefficients and *** denotes significance at 1% level

Table 4: Long-Run Elasticity of Economic Growth with respect to Electricity supply in Nigeria

Variable	Long-run Elasticity
Log (ELSP)	0.568***

Note: *** denotes statistical significance of the computed long-run elasticity at the 5% level

Table 5: Short-Run Causality Results from the Wald Statistical Hypothesis Test

Variable(s)	Test Statistic (s)	p-value(s)
Δ Log (ELSP)	5.255*	0.0000
5 Δ Log (IVES)	12.255*	0.0000
Δ Log (GCFE)	2.562***	0.0000
Δ Log (PEXP)	13.002***	0.0000

Note: *, *** denotes statistical significance at the 1 percent and 5 percent levels. Figures in parenthesis are the marginal significance values

The Bounds results of the unrestricted error correction ARDL model are reported in table 2 above. The coefficient on electricity supply is positive and statistically significant. This indeed, empirically rationalized validate the hypothesis that electricity supply positively and significantly stimulate long run economic growth. For the control variables in the study, the results reported a negative long run impact on the growth rate of *GDP*. The finding thus implies that investment in electricity supply does not positively influence long run growth. For the control variables, *GFCF* is positively significant at ten percent significant level.

This finding shows that an increase in gross fixed capital formation will increase the economic growth in long run. The coefficient of model determination having adjusted for degrees of freedom is 0.625. As it were, 62.5 percent of the total variation in the growth of real output is corrected for within one year of adjustment. Thus, having adjusted for degrees of freedom, the estimated error correction model can be adjudged statistically fit and robust. The F-statistic is 15.998. This is highly significant. It implies an overall significance of the estimated model. This indeed is a re-enforcement of the goodness of fit of the estimated error equation.

The reported F ratio passes the significance test at the conservative half percent level of significance. This goes along extent to indicate the existence of a significant linear long-run relationship between the growth rate of *GDP* and the level of electricity supply in Nigeria. On the part of individual significance of each explanatory variable, it is evident that investment in electricity supply is vital for stimulating the growth rate of *GDP* in Nigeria. Gross capital formation also passes the test of significance at the 5 percent level of significance. In effect, these suggest that electricity supply, investment in electricity supply and gross capital formation economic growth are significant determinants of growth in Nigeria.

This further reinforces the fact that the results reported are of policy significance. The results of the bounds co-integration test rejects the hypothesis of no co-integrating relationship between the growth rate of *GDP*, electricity supply, investment in electricity, gross fixed capital formation and public expenditures at one percent significance level. In simple terms therefore, the results show that there is long-run relationship between electricity supply, investment in electricity supply, gross fixed capital formation, and total government expenditure proxy for public expenditure and *GDP* growth in Nigeria.

This is against the back-drop of the fact that the computed *F*-statistic of 6.555 is greater than the lower critical bound value of 3.74. The long-run elasticity of the *GDP* growth rate with respect to electricity supply is 0.568 in Nigeria, econometrically revealing the robustness of the estimated

regression results. All the tests disclosed that the model possess the desirable BLUE properties. Indeed, the model's residuals are serially uncorrelated, normally distributed and homoskedastic. Therefore, the estimated set of results is devoid of the econometric problems of autocorrelation, misspecification and heteroskedasticity.

Using the Wald statistical test procedure, the dynamic short-run causality effect was determined by placing the zero restriction on the coefficients of electricity supply, investment in electricity supply, gross fixed capital formation and public expenditure with their lag values also equated to zero. On the rejection of causality among the aforementioned regressors, we indeed establish that electricity supply, investment in electricity, gross fixed capital formation and public expenditure are statistically significant to granger-cause *GDP* growth rate in Nigeria at both the one percent and five percent significance levels respectively.

5. Conclusion and Recommendations

In this paper, we empirically explored the impact of electricity supply and investment in stimulating economic growth over a thirty-six year sample period. With electricity supply being the key variable under study, other regressors namely, investment in electricity supply, gross capital formation and public of all the aforementioned variables with the growth rate of *GDP* were tested on the basis of an estimated econometric model. Flowing from the empirical results is the fact that electricity supply and economic growth are positively related in Nigeria. The major finding is that electricity supply contributes significantly to *GDP* growth in Nigeria. This then suggest the need for policies to enhance electricity supply prospects with the ultimate aim of fostering a sustainable increase in the growth rate of real *GDP*. Thus, the Nigerian government should implement a broad set of electricity generating policies that can help abridge electricity shortage in the country. In addition, policies should be put in place to increase existing capacity. This is highly desirous considering the urgent need to aptly enhance the growth prospect of the economy.

Again, as investment positively affects *GDP* growth and electricity consumption affects investment, monetary authorities should undertake appropriate monetary policy to provide loan at cheaper rate in banking sectors. The enhancement of capitalization towards small investors at cheaper cost helps in expanding existing business and generates new business activities as well, the means of creating more employment opportunities, increasing purchasing power.

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Creating Environment Opportunities for New Market Innovation in Developing Economies: A Synthesis, Framework and Research Propositions

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Abstract

There is the lack of framework for understanding the external factors influencing innovation by Small Medium Sized Enterprises (SMEs) in Knowledge-Intensive Business Services (KIBS) sector in developing economies. KIBS are private innovative firms that manage knowledge acquired from the environment to provide customised proficient service solutions to client firms. However, a better understanding of such external factors is important for the development of this sector for sustainable economic growth. This study is posited on the institutional theory by recognising the role of formal and informal knowledge institutions in the environment as sources of acquiring knowledge resources for KIBS innovativeness. This theoretical paper therefore develops a framework that consists of the distinctive formal and informal institutions that can influence KIBS SMEs innovation in developing countries. The scope of the study is Sub-Sahara Africa, original propositions that KIBS in developing countries can flourish in new market innovation if they maximize the use of external institutional services for knowledge resources, which can be subjected to future empirical research. Certain suggestions that government should develop informed policy to enhance knowledge networking infrastructure across the formal knowledge institutions is made. Research implications of the framework developed are discussed at the end of the paper. This study contributes originally to literature in entrepreneurship in developing economies.

Keywords: Entrepreneurship, Developing Economies, Institutions, Knowledge-Intensive Business Services (KIBS), Market Innovation

JEL Classification: Q56

1. Introduction

While a growing body of research exists on institutional environment of entrepreneurship in developing economies, little attention has been given to innovation in Knowledge-Intensive Business Services (KIBS) (Muller & Doloreux, 2007; Scarso & Bolisani, 2012; Savic and Lawton-Smith, 2013; Pinto et al., 2015; Johnston and Huggins, 2016). This twenty first century is witnessing development in the labour force of the non-agricultural sectors of the developing countries, especially in KIBS like Information and Communications Technology (ICT) (Gross,

2012). This is expressed in growing micro-electronic based, combinations of computing and telecommunications in e-business, e-banking, e-government, e-health, fixed and mobile phones networks and so on in the urban and rural areas which imply that developing economies have started making progress in KIBS sectors (Savic and Lawton-Smith, 2013; Fischer, 2015; Pinto et al. 2015; Johnston and Huggins, 2016). In Nigeria for example, the service sector has increased its importance for GDP and employment, as its contribution increased significantly from 29% and 42% in 2000, in spite of the economic challenges, by 2016, it rose to 59.7% and due to the recession in 2018, it dropped to 55.8%. Nevertheless, it has still accounted to being the largest contributor to the economy (National Bureau of Statistics (NBS), 2018). This is quite significant, considering that KIBS firms have high propensity for innovations and job creation in developing countries. Despite this development, there is little understanding of the environment for innovations in developing countries, especially in knowledge- intensive industries.

In advanced economies, several efforts have been made in literature on innovation to identify the different innovations by small and medium sized enterprises (SMEs) in knowledge-based industries (OECD/Eurostat, 2005). However, existing literature are fragmented as some scholars identified local market size and sources of knowledge as drivers of KIBS location and new firm formation (Andersson & Hellerstedt, 2009; Adeyeye & Adepoju, 2015). Others focussed on the diverse roles of KIBS as drivers of multilevel knowledge dynamics but found that KIBS are influenced by regional knowledge basis and institutional settings (Strambac, 2008; Abubakar, Mitra & Adeyeye, 2018). Thus, while the role of environmental conditions for KIBS entrepreneurship has been recognized, most of these studies have so far focused on matured market economies where the KIBS sector is in an advanced level of growth in terms of its locality across regions. More essentially, most of the studies have not given attention to understanding the framework for the environment of KIBS entrepreneurship in the developing economies especially with respect to New Market Innovation (NMI) in other geographical area. For instances, Javalgi et al. (2011) developed a framework for understanding KIBS in developing economies which links both the domestic and international expansion of firms to the environment. Empirical studies of entrepreneurial environment for KIBS suggest the likelihood that the environment influencing innovative activities in developing countries are different from the advanced countries (Adeyeye, 2013). Hence the need to gain insights into the environments stimulating market innovation in knowledge-based industries in Sub-Saharan Africa is pressing.

This paper thus argues that the emergence of KIBS in developing economies represents an important milestone but under-theorised research agenda in the 21st century. Little is known about KIBS in developing economies as entrepreneurship is least studied despite the significance of this sector as an integral part of technological advancement in this present-day. A framework is also missing to incorporate the available literature on KIBS environment and implicit links have not been established between role of KIBS and the place of environment as facilitators in developing economies.

In an attempt to bridge this gap, the main features of KIBS is connected to the environmental dimensions in developing economies by specifying the way institutional environment can foster KIBS SMEs likelihood to innovate. It focusses on new market innovations since innovation in developing countries is often hardly new to the world (Eurostat/OECD, 2005; Adeyeye, 2013). A conceptual framework is developed to incorporate existing literature on KIBS institutional

environment. Later, develops some propositions to facilitate future research, and offer suggestions for policy makers.

2. Literature on Environment for Knowledge-Intensive Business Services (KIBS)

Entrepreneurial environment for KIBS refer to anything outside the firm that has critical implications for how things are done in the firm (Finney, Lueg & Campbell, 2008) in order to obtain knowledge for NMI. This study is relevant in view of the argument presented by Gnyawali and Fogel (1994), and Svetina and Prodan (2008) that environmental factors are more relevant to understanding entrepreneurial activities than personal attributes. Empirical studies in entrepreneurship also established an association between the external environment and entrepreneurial activities in any region (Baumol, 1990; Carter & Wilton, 2006).

Various environmental factors have been recognized in entrepreneurship literature as being influential. Most frequent among them are legal regulations and policies, public policies, markets influence and physical infrastructural facilities (Baumol, 1990; Dobbin & Dowd, 1997; Thorntorn & Ocasio, 1999; Agboli & Ukaegbu, 2006). Nevertheless, Gnyawali and Fogel (1994:44) and Utomi (1998) perceived entrepreneurial environment as ‘the overall economic, socio-cultural and political factors that influence people’s willingness and ability to undertake entrepreneurial activities’. On one hand, Gnyawali and Fogel (1994:44) further referred to it as ‘the availability of assistance and support services that facilitate the start-up processes’. On the other hand, Romanelli (1989) observed such as availability of necessary knowledge resources that lead to the development of entrepreneurship. Sautet (2006) however, asserted that entrepreneurship does not depend on the availability of knowledge resources in an economy but rather on the quality of institutions that foster the exploitation of knowledge resources and opportunities. The overall economic, socio-cultural and political factors as well as the knowledge resources are located in the institutional environment of a country which could have a positive or negative effect on innovation.

The institutional constraint and freedom has been widely acknowledged in literature as influencing organisational set-up (Bruton et al., 2010; Scott, 2008). For instance, if the institutional structure rewards productive activities, organisations will engage in productive activities and vis-à-vis (Baumol, Litan & Schramm, 2009). For example, the recent general wave towards SMEs, innovation and technology (Wennekers & Thurik, 1999) is dependent on institutional support for new market innovation as in the context of this study. Thus, organisations are emanating globally for productive activities. The institutional environment equally set the boundary for entrepreneurial opportunities by affecting the rate, rapidity, size (Gnyawali & Fogel, 1994; Hwang & Powell, 2005) of new market innovation.

Thus, this paper considers ‘the framework for entrepreneurial environment in developing economies’ as a combination of different enabling factors as found in the institutions that ensure new markets innovation by KIBS entrepreneurs in developing economies. The factors are considered in the light of the formal and informal institutions as establishing the basis of motivation for people to embark on entrepreneurial activities (North, 1990; Ayyeetey, 2008).

3.0 What is Knowledge-Intensive Business Services (KIBS)?

KIBS are ‘private firms that generate, collect, analyse and distribute knowledge with the purpose of providing customised proficient service solutions to issues that client firms are unable and unwilling to develop’ (Miles et al., 1995) by themselves. They are ‘knowledge-producing, knowledge-using and knowledge-transforming industry that use knowledge-based methods to present themselves as ‘drivers of knowledge dynamics in multilevel contexts’(Strambach, 2008).

The KIBS sector covers a wide range of activities based on professional knowledge. Miles et al. (1995) categorised them into 'firms-to-firms' and 'firms-to-customers' services. Subsequently classified as P-KIBS (traditional professional) services like legal, accountancy, business and management, marketing research which are intensive users of technology, T-KIBS (technology-based) services like engineering, R&D and consultancy which are directly related to Information and Communication Technology or technical activities and C-KIBS, referring to computer and software related services (Martinez-Fernandez & Miles, 2006). As KIBS is in growing stage in the developing economies, this study encompasses the total aspects of KIBS without discrimination. KIBS operate mainly with highly qualified professionals who provide expertise services with close interactions with clients particularly in technological fields or any functional area in contrast to the requirements of staff for physical services (Miles et al., 1995; Sengupta & Niranjai, 2018).

Innovation has been particularly attributed to product, process and technology until recently that services such as KIBS are included (Adeyeye, 2013; Savic and Lawton-Smith, 2013; Johnston and Huggins, 2017). KIBS innovation in developing economies is more of connecting innovation generation and diffusion together as entrepreneurial behaviour. However, the developing economy market is often so much about the transfer of innovation found in developed economies to their countries which is market innovation (OECD, 2005).

4. The Significance of Knowledge- Intensive Business Service to the Economies

Link and Siegel (2007) observed that most of the service sector's developments from the early 1980 are principally services with knowledge content. Hence, the recognition of KIBS as a sub-sector in the service industry becomes a powerful sector with a rapid growth in many economies (EFILWC, 2006; Sengupta & Niranjai, 2018). For instance, the GDP for the service industry which included KIBS doubled within a decade in USA employment to a range of 70-80%. Precisely by 2015, 78.1% and 78.6% of GDP in USA and UK respectively was in service sector (World Bank, 2015). The recent report about knowledge economy stated specifically that more than 20% of UK GDP is KIBS and comfortably the largest singularly growing sector of the economy (Sissons, 2011; Sengupta & Niranjai, 2018). This development is found in both the developed and developing economies at different trends depending on how favourable the environment for entrepreneurship (Baumol, 1990). For example, service sector contributes 50% to GDP in Uganda; 50.4% in Kenya; 52% in India; 56.5 % in Zambia; over 60% in Korea and Brazil (World Bank, 2015). In Nigeria, it contributed about 30% to GDP in 1985 and by 1990, it declined to 25% reaching its lowest as 18.9% in 1992. By 1994, the share of the service sector in the GNI was stabilised to 20% and to almost 27% in 1998 but by 2016 it was 59.7% but decreased to 55.8% in 2018 due to the economic recession, yet, the largest contributor to the economy (National Bureau of Statistics (NBS), 2018). In addition, the general growth in information and communication technology (ICT) as a significant part of KIBS also contributed 8.27% to GDP in 2015 (NBS, 2015). These figures attest to the wave of change in the developing economies towards KIBS thereby requiring investigation.

In view of the above, it can be established that there is presently a global awakening in the KIBS sectors in this technological advancement age and as one of the most rapidly developing sector of the economy (Baró, 2008; Johnston & Huggins, 2017). This is particularly important because there are many firms that experienced tremendous growth due to their vision for NMI (Akoni, 2011). Innovation is critical to growth. Some started small and became multinationals through markets innovation by embracing pioneering work. Examples of such firms in Africa are Safaricom in Kenya, whose pioneering work on mobile banking has become so prominent in

developing economies that now even some developed economies are trying to emulate it (Dahunsi, 2012). Although, most developing countries have issues, for instance, there were concerns over Nigeria as an emerging economy at the national and international level as a high risk frontier market (Cock, 2012) due to the security challenges.

In February, 2009, Laurent, Procter and Gamble's (P&G) Group President in charge of Eastern Europe, the Middle East and Africa announced the target to invest intensely in Nigeria through 2015 (Uzonwanne, 2011; Cock, 2012). Nigeria had an exploratory factory since 1990 and the market has been a top-level issue among the multinationals as well as SMEs. What is so attractive about Nigeria despite the risks? It has population advantage with a fast-growing economy and an emerging middle class displaying an increasing level of confidence despite its non-competitive infrastructure and strong ICT impact (Uzonwanne, 2011; Cock, 2012).

Thus, KIBS are very important in the creation and implementation of new products (hard and soft wares), services and processes as carriers, shapers, facilitators and creators of both technological and managerial innovations in the economy. They structure the infrastructure of the knowledge economy by fostering mobility of knowledge and ideas around the economy, and encouraging firms to maximise the use of new technologies and ideas. They provide support systems like information technology (IT) networks and legal or accountancy functions for business operations. They contribute both to an overall economic growth and specific industry clusters growth (Sissons, 2011). Also, there is a recent shift from the explosion of informal trade in developing countries to the emergence of KIBS (Swedish Trade Council, 2012). For example, Sub-Saharan Africa has emerged as the world's fastest growing ICT sector (Swedish Trade Council, 2012). However, to enable KIBS SMEs function appropriately, the entrepreneurial environment must be favourable in providing resources for new market innovation which seems to be the prominent innovation in the developing economies (Adeyeye, 2013).

5. New Market Innovation Concept

The market is the linkage between societal needs and economic pattern of response to innovation (Mitra, 2012). New Market Innovation (NMI) therefore, is the application of early-entry strategy by a firm into a new market or to a new focused group with an 'existing product', with the functional characteristics of the product not significantly changed, to exploit opportunities in a market and probably gain the first-mover advantages (Schumpeter, 1934; OECD/Eurostat, 2005; Abubakar, 2009). At other instance, it may involve the introduction of new sales channels like a new way of selling or displaying goods and services to customers (Eurostat/OECD, 2005). It is also perceived as the first introduction of 'existing' products /services to new places and new people (Dahunsi, 2012). NMI is about entering a new market with the aim of addressing customers' needs in a better way and increasing firms' profitability. Summarily, the main element of market innovation in Schumpeterian sense is about the gap left in a market by those who currently serve it but recognized by the entrepreneur who exploits and creates values from it. Drawing on this argument, KIBS entrepreneurial environment for new market innovation in a country is dependent on many factors but predominantly on the environment where the innovation will take place (Adeyeye, 2013).

Although, Schumpeter refers to opening of new market as a type of innovation, its importance received less emphasis in comparison to product and process innovations (Liebermann and Montgomery, 1988). This made knowledge and theories about market innovation to be lacking in the literature (Tidd, Bessant and Pavitt, 2005). New market innovation is regarded as the main innovative activities that increase sales and profit (Halpern, 2010). Hence this study focuses on

the framework for environment for KIBS SMEs NMI which can be of significant implication to entrepreneurs and policy makers especially in terms of guidelines on promoting entrepreneurial SMEs in the developing economies.

6. An Institutional Framework for KIBS in Developing Economies

The institutional theory emphasises that the external environmental factors have great influence on firms' ability to innovate (Baumol, 1990; Li and Matlay (2006). Baumol (1990) argues that different ways entrepreneurs use their resources on innovation is dependent on the quality of institutions in that country. This is pertinent because the structure according to Baumol (1990) affects the incentives on resources invested in productive activities (i.e. legal economic activities) in contrast to unproductive activities (illegal economic activities). Accordingly, Sobel (2008) used different measures of productive, non-productive entrepreneurship and institutional quality to substantiate Baumol's theory. Boettke and Coyne (2006) and Sautet (2006) also empirically establish an association between institutional structure and the form of entrepreneurship arising in different nations. Institutional theorists (Baumol, 1990; North, 1991; Sautet, 2006; Aryeetey, 2008) identified the formal and informal environment for entrepreneurship in developing economies. For instance, Sautet (2006) investigated the role of institutions in entrepreneurship in Romania, and discovered that the challenges of most entrepreneurs in developing countries are directly related to the paucity in the formal institutional structure. These studies therefore conclude that where the reward for productive entrepreneurship is somewhat higher than that of the non-productive entrepreneurship, productive activities seem to be prevalent and vice versa.

However, while scientific studies on innovation and institutions clarify reasons for entrepreneurs' involvement in productive or unproductive activities, there is hardly any research that has examined the framework for KIBS environments for NMI in developing countries. This is essential, since institutions set the rules and norms guiding societies and can either limit or promote innovation (Gnyawali and Fogel, 1994; Hwang and Powell, 2005). Such studies assist in uncovering the nature of institutions that encourage or restrain NMI in developing countries. The Formal institutional environment on one hand, are the governmental institutions and other organisations recognized by law, such as research institutes, financial institutions, higher education institutions and formal collaborations with other KIBS firms (Muller and Doloreux, 2007). Informal institutions on the other hand, are the non-governmental institutions and organisations without legal framework (Taylor and Thorpe, 2004) though not illegal but cultural and natural. Such examples are knowledge received through personal contacts, network of friends and family members, or imitations of other KIBS firms (Aidis and Estrin, 2006; Scarso and Bolasini, 2012). However, KIBS firms need knowledge resources from both institutional environment for NMI.

The formal knowledge institutions are places where knowledge is disseminated in recognized and highly institutionalised setting while informal knowledge institutions are found in diverse places outside the formal establishments. They take place more casually, sporadically, spontaneously and cheaply in relation to prevailing circumstances. Informal knowledge institution relies on entrepreneurs' endeavour to network rather than organisational initiatives or directives (Ekpo and Umoh, 2011). They are based on reciprocal exchange of information and favour. This is often accessed through the entrepreneur's or staff network (Minniti, 2005) on one-to-one at homes, offices, social gatherings, daily interactions and shared relationships in the society where knowledge and information are disseminated (Matlay, 2008).

Thus, KIBS SMEs that are embarking on NMI often need to access both formal and informal knowledge which are often external to the firm. In advanced economies, formal institutions, particularly educational institutions are considered important contributors to innovation (Acs, 2002; Li & Matlay, 2006; Adeyeye & Adepoju, 2015; Johnston & Huggins, 2017) while developing countries often have underdeveloped formal institutional environments, especially educational institutions (Acs and Virgill, 2010; Adeyeye, 2013). Such weakness in institutional environments implies that a large amount of economic activities in developing economies occur through informal sources (Minniti, 2005; Amine and Staub, 2009; World Bank, 2012). This is particularly the case for developing countries in Sub-Saharan Africa, which has the highest prevalence of informal economic activities in the world.

The weaknesses or absence of formal institutional architecture often paves way for the prominence of informal institutions (Bruton et al, 2010; Adeyeye & Adepoju, 2015) in innovative activities like NMI. This study, thus, discusses the entrepreneurial environment so that innovative KIBS SMEs will channel the search to where adequate knowledge resources for NMI are accessible. It therefore suggests that informal sources may have greater influence than formal institutional sources of knowledge for NMI in our context.

6.1 The Formal Institutional Sources of Knowledge

One of the key dimensions for sustainable innovative activity in an entrepreneurial environment by KIBS SMEs is the capability to interact with external formal sources to access, acquire and develop new knowledge to exploit innovation processes (Hollenstein, 2003) like NMI. The expected functions of formal institutions therefore in an economy are reduction of transaction costs, transparent rules and regulations and efficient market mechanisms (Bruton, Ahlstrom & Li, 2010).

Formal knowledge through external R&D (den Hertog, 2000; Muller & Doloreux, 2007) located in specific places like R&D divisions which are not easily accessible to SMEs because of their size is one main source. Researchers (Kessler, Bierly and Gopalakrishnan, 2000; Strambach, 2008; Johnston & Huggins, 2017) have recognized that KIBS SMEs are increasingly engaging in R&D co-operative engagements for many reasons. For instance, they do so to complement internal knowledge resources, access technical competencies, minimize fixed costs related to capital assets acquisition and obtain external resources needed for innovation. Firms can interact in various ways as discussed in this study to access knowledge and mechanisms outside their boundaries. Such interactions enable acquisition, dissemination and production of new knowledge (Muller and Doloreux, 2009) for NMI in the formal institutions. It is known to them that the more they access external sources, the more resources are available for expertise disposal and the more they are able to meet the increased speed and development (Romijn & Albaladejo, 2002; Svetina & Prodan, 2008) especially in ICT as it affects KIBS NMI.

6.1.1 Collaborations

This is inter-industry or inter-firm linkages that increase the NMI knowledge base. Collaborations (networking) with firms within locally close geographic proximity (Svetina & Prodan, 2008) and outside geographical boundaries, (Kessler et al., 2000) is a form of corporate socialisation. It enhances knowledge stream flow from one firm to another and establishes increased communication through participation for transmission of NMI knowledge between firms. Inter-firm collaborations and alliances were long assumed to be particularly limited to the local level and were studied within the context of clusters (Svetina & Prodan, 2008). However, with advances in ICT, the geographic scope of this interaction is widening and often spreads

across national borders such that firms could collaborate with firms outside and inside the country (Svetna & Prodan, 2008) in order to seek enabling knowledge for NMI. Thus, Adeyeye (2013) in a survey attested to the importance of collaborations within the country and their strong alliances with firms outside the country as the backbone sources of knowledge for NMI by KIBS SMEs. However, KIBS firms are likely to increase the possibility of obtaining knowledge for NMI if they collaborate with other related firms in the environment.

6.1.2 Partnership with Research Institutes and Universities

Research institutes and universities (Strambach,2008; Muller & Doloreux, 2007) are actively involved in a set of relationships that occurs in the business environment (Strambach, 2010; Johnston & Huggins, 2017). They are renowned for knowledge transfer activities to support firms and industries through research, training and education (Mitra, 2012). They are perceived as lead actors in innovative activity of KIBS by providing scientific and technological research inputs for entrepreneurial firms (Strambach,2008). They are often funded purposely for research thereby serving as empirical guide and source of external R&D (Den Hertog, 2000; Muller & Doloreux, 2007; Johnston & Huggins, 2017) that KIBS firms can benefit for NMI. They offer research-based knowledge and direction like, identifying locations where firms, industries or individuals will need KIBS. The research indication is a source of knowledge for NMI that a new opening will be required for a KIBS firm to take advantage.

6.1.3 Business Associations and Clubs

Business associations are organised network that accelerate the process of making contacts. Conferences, workshops and seminars (Den Hertog 2000; Muller &Doloreux, 2007) are very important sources. Meetings are remarkable place to learn about market trends, identify market potentials and meeting potential competitors. It creates the opportunity to meet with professionals like accountants, patent attorneys and so on that easily comes in contact with firms that needs the support and services of KIBS. This becomes a formal source of NMI knowledge. The American Electronics Association is a typical example of an association that holds such seminars and meetings. Similarly in Nigeria, most of the KIBS firms in their segments have their business associations meetings regularly for seminars and deliberations (Adeyeye, 2013).

6.2 The Informal Knowledge Institutions

Another key dimension is the informal institutional sources of knowledge which include customers/client firms (Kessler et al, 2000; Tether &Tarjar, 2008) especially lead users. They are often informed about what they want and know the environment that needs KIBS especially in their locality. Literature and search techniques on internet (Carley, 2006; Muller & Dolloreux, 2007; Pilot study, 2011) expose a world of opportunities; personal contact (Burt, 1997; Pedersen et al., 2002) helps to acquire knowledge of existing and non-existing markets without KIBS for NMI. Firms can imitate competitors (den Hertog,2000; Miles, 2000) in KIBS by improving on their package and making a novel presentation; and social network- connections through strong and weak ties (Burt, 1997;Pedersen et al,2002). This is very paramount in African context because of the culture. Networks could be of relatives, friends, business associates and collaborations that can facilitate information for NMI.

6.2.1 Lead Clients

Feedbacks from clients are regularly used by many KIBS globally and in Nigeria because they attract little or no transactional cost in comparison to the tremendous benefits obtained from it. In that stream, lead clients are termed as sophisticated customers but very useful source of external knowledge (Kessler et al, 2000; Strambach, 2008; Pedersen et al, 2002) because they offer more

feedbacks that include exchange of technical knowledge and salient information about market conditions and trends needed for innovation into new market and growth. Adeyeye's (2013) findings revealed that clients' feedback is very important in obtaining knowledge of the environment. Lead users are often professionals or experienced people that have conducted research on assets management. They usually sit together with the management team to discuss their findings and express their wish over their assets management. This suggests that KIBS customers could be reliable sources of knowledge for NMI without cost.

6.2.2 Suppliers of Equipment and Materials

The suppliers of equipment and materials (Scarso & Bolisani, 2012) are very dependable and effective in offering essential insight into the organisation of information, logistics and other functions that would offer knowledge for NMI opportunities. Furthermore, the status of equipment and materials in terms of availability is vital for new market opening. Where demand is high and supply is low can lead to crisis such as conflict in usage of resources by competitors, as well as rise in the cost of production which invariably leads to high cost of delivery and less profit. Otherwise, if the demand is low and supply is high, it is an essential knowledge for NMI by identifying and seeking new users/customers for KIBS.

6.2.3 Personal Contact and Local Linkages

Empirical studies (Burt, 1997; Pedersen et al, 2002) show that personal contact through inquiries and survey are reliable sources of knowledge acquisition. Imitation of existing activities of competitors in KIBS (den, Hertog, 2000; Miles, 2001) is another means of acquiring knowledge of the environment. Innovative firms like KIBS might decide to make certain amendments for novelty to have a new market. Local linkages (Pedersen et al, 2002) through friends, relatives and club members are reliable sources of knowledge for NMI. The concept of kinship ties, both strong and weak may be relevant as well. These players are willing to invest necessary knowledge about the absence or inadequacy of KIBS in an environment to the entrepreneur for the benefit of NMI. These are basically forms of knowledge acquired through trust which is as the result of network relationship. A framework is therefore developed (see figure 1).

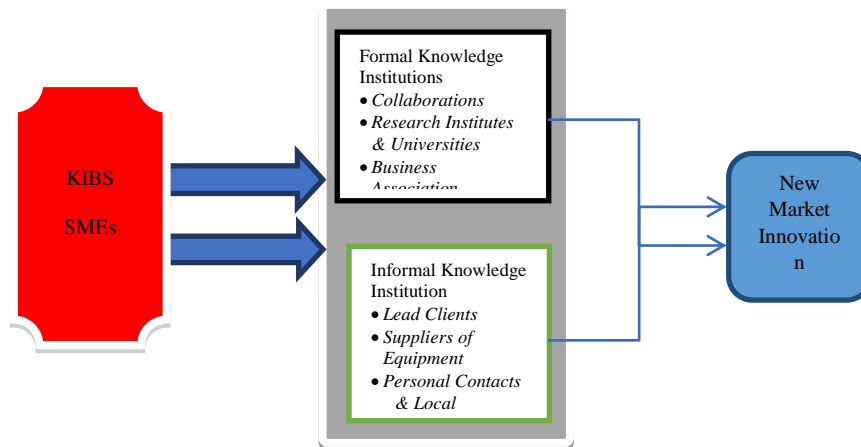


Figure 1: Framework for analyzing Institutional Environment for KIBS NMI in developing economies

Source: Adeyeye (Unpublished thesis, 2013)

Figure 1 reveals that KIBS SMEs can acquire knowledge from the institutional environment of both formal and informal institutions for their entrepreneurial behaviour, NMI.

The formal institutional environment is directly related to macroeconomic policies and procedures (that is, legal and institutional framework). The more supportive the formal knowledge institutions for effective innovative activities in the market, the less the constraints for KIBS firms to acquire knowledge for NMI and the greater the likelihood of KIBS firms NMI. Moreover, the informal institutional environment relates to the socio-cultural factors. The more the informal knowledge institutions place values on KIBS, the greater the people's involvement in acquiring and releasing knowledge for KIBS, and the more likely the propensity for KIBS firm NMI being high. Thus the above analysis suggests the following propositions:

P1: The more supportive the formal knowledge institutions, the more KIBS firms acquire knowledge, then the greater the likelihood for NMI.

P1(i): The more effective the collaborations between firms in a developing country, the more the KIBS firms acquire knowledge, the greater the likelihood for NMI.

P1(ii): The more efficient the research institutes and universities in a developing country, the more the KIBS firms acquire knowledge, the greater the likelihood for NMI.

P1(iii): The more favourable the business associations in a developing country, the more the KIBS firms acquire knowledge, the greater the likelihood for NMI.

P2: The more values placed by the informal knowledge institutions on KIBS, the greater the involvement in acquiring and releasing knowledge for KIBS firms, the higher the propensity for KIBS firm NMI.

P2 (i): The more the values placed by the lead clients on KIBS, the greater the involvement in acquiring and releasing knowledge for KIBS firms in a developing country, consequently, the higher the propensity for KIBS firm NMI.

P2 (ii): The more the values placed by the suppliers of equipment on KIBS, the greater the involvement in acquiring and releasing knowledge for KIBS firms in a developing country, and the higher the propensity for KIBS firm NMI.

P2 (iii): The more the values placed on personal contacts and local linkages on KIBS, the greater their involvement in acquiring and releasing knowledge for KIBS firms in a developing country, then the higher the propensity for KIBS firm NMI.

An essential aspect of this research is to understand the relative importance of each factor of the formal and informal knowledge institutions for KIBS NMI. It would be useful to understand the relative importance as apportioned by KIBS entrepreneurs, policy makers and development agencies like SMEDAN, World Bank and so on in the country. Finally, it might be necessary to study inter- country differences in the level of acquisition of knowledge for KIBS and propensity to NMI. A survey might be appropriate for data collection.

7.0 Conclusion and Recommendations

At the firm level, this study has documented the influence of environmental factors on KIBS NMI. The ability to source knowledge from the external environment's institutional sources of formal and informal knowledge would lead to greater likelihood of NMI. The framework of institutional environment developed provides a basis for studying their roles in influencing NMI

by KIBs SMEs in developing countries, thereby serving as a foundation for developing richer theories in KIBs SME/entrepreneurship literature and public policy.

In view of the foregoing, the following recommendations are made: Government can contribute to entrepreneurship by possibly designing informed policies that could provide a broader scope that underpins the development of knowledge networking infrastructure across the formal knowledge institutions; the government should enact laws and regulations to support, promote and protect entrepreneurial knowledge for KIBs NMI. Also, funds should be made available for the formal knowledge institutions to embark on innovative research for NMI as the country develops its capacity for the knowledge-based economy. Moreover, introduction of policy that sensitizes the public for societal recognition of KIBs and innovation, by introducing entrepreneurial values and behaviours in curriculum to enhance the informal knowledge institutions as the formal may soon give way for the informal because of the economic downturn; and KIBs entrepreneurs should strengthen the business associations for knowledge acquisition through seminars, workshop and networking.

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Relative Impacts of Monetary Policy Instruments on Economic Growth in Nigeria

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Abstract

The objective of this study is to empirically determine the impact of monetary policy instruments on economic growth in Nigeria with Autoregressive Distributed Lag Model (ARDL) and Vector Error correction model (VECM) as methodology, after necessary test on reliability of data are conducted. Also, due to the change in government policy i.e 2006 bank consolidation, test for structural stability was carried out using CUSUM, CUSUMSQ and Chow test. Standardized regression was used to find out the comparative or relative impacts of the monetary policy instruments (Monetary policy rate, Cash reserve ratio, and Exchange rate) on the target variable (Economic growth,). From the analysis of the model for both alternative sub periods, the coefficients of the estimated regression (for both ARDL and VECM) are not the same in the two sub periods. There are significant changes in the coefficients of the policy variables. This means that the 2006 structural reform in the financial sector in Nigeria brought changes in monetary policy rate, CRR, exchange rate and also changes in economic growth. Also, from the two sub periods CRR does not have any significant effects on economic growth in short run, but it has effects in the long run. In the short run, in both sub periods, monetary policy rate does not have significant effect on economic growth. Also in the long run, it does not have significant effects on economic growth in both sub periods. In the short run and long run, for both sub periods, exchange rate has a consistent negative and significant effect on economic growth in Nigeria. Hence, Economic growth is more sensitive to exchange rate compared to monetary policy rate and cash reserve ratio in Nigeria. However, since exchange rate has significant impact on economic growth, combined with the present structure of Nigeria economy, revaluation of naira (exchange rate revaluation), will surely promote drastic increase in output level in Nigeria

Keywords: Exchange Rate, Economic Growth, Monetary Policy Rate, Cash Reserve Ratio

JEL Classification: E52, O42

1. Introduction

Monetary Policy refers to the use of instruments and measures designed and implemented by the Monetary Authority to regulate the value supply and cost of money in an economy, in consistent with the anticipated level of economic activities. The policy instruments used by Monetary Authority to affect these macroeconomics policy targets are known as monetary policy instruments, which include bank rate (monetary policy rate), money supply, exchange rate, required reserves, domestic credit, liquidity ratio, and Open Market Operation (OMO). The

effects of monetary policy depend on the structure of the economy under analysis, the approach being adopted, the choice of instruments used and the identifying restrictions imposed on the models (Chuku, 2009). An appropriate measurement of the effects of monetary policy on macroeconomics policy targets is therefore essential for effective policy making and for choosing among alternative macroeconomic frameworks. The responses of macroeconomic policy targets to the trio of Bank rate, which is also known as Monetary Policy Rate (MPR), Cash reserve ratio and Exchange rate and their comparative impacts in achievement of monetary policy goals cannot be over emphasised. Although, a lot of works have been done in this area, such as Mangani (2009), Oluwole & Olugbenga (2015) the key interest is to find out if Bank rate in combination with other instruments like Exchange Rate and Cash Reserve Ratio can determine variation in macroeconomic goals like price stability, economic growth, full employment etc. Also, there is need to know the comparative impact of these three monetary policy instruments on the macroeconomics policy targets. Policy makers should know the prime or the most effective monetary policy instrument(s) in their country.

The study is an attempt to determine the most suitable of the monetary policy instruments for achieving economic growth, so as to aid the CBN in making a decisive policy. Hence, the broad objective of this study is to empirically determine the effects of monetary policy instruments on economic growth in Nigeria. While specific objectives of the research work are: to empirically determine the effect of bank rate, cash reserve ratio and exchange rate on economic growth in Nigeria both in the short run and long run; and to rank these monetary policy instruments in term of their comparative effectiveness in achieving economic growth.

2. Literature Review

2.1 Conceptual Review

Required Reserves (RRs): Reserve Requirements or Required Reserves are the minimum percentage of deposits that banks need to keep as reserves with central banks. This part of deposits cannot be used to provide private credit or to buy securities. Higher reserve requirements therefore reduce the money multiplier: For a given monetary base, broad money will decrease with higher reserve requirements. If the central bank targets quantities and keeps the monetary base constant, the effects of an increase in reserve requirements are analogous to a standard monetary contraction. Higher reserve requirements increase the level of interest rates. In order to fulfil the reserve requirements without reducing credit extended, banks need to attract more deposits, which drives up deposit rates. The increased marginal funding costs in turn will drive up lending rates as well and raise the general level of interest rates (CBN 2015)

Bank Rate (Monetary Policy Rate): The most influential economics tool the Central Bank has under its control is the ability to increase or decrease the monetary policy rate(Bank rate or Discount rate) .Shifts in this crucial interest rate have a drastic effect on the building blocks of macroeconomics, such as consumer spending and borrowing. For banks and depository institutions, the monetary policy rate is the interest rate assessed on short-term loans acquired from Central Banks (CBN 2015).

Exchange Rate: Exchange rate is the ratio between a unit of one currency and the amount of another currency for which that unit can be exchanged at a particular time. Exchange rate plays a vital role in a country's level of trade, which is critical for every free market economy in the world. It is therefore, not surprising that, exchange rate is among the most watched, analyzed and government manipulated monetary policy instruments. Most countries attempt to moderate their domestic currency fluctuations by imposing restrictions on exchange rate movements.

Economic Growth: A key challenge that modern economies are faced with is the achievement and sustenance of economic growth and development with the ultimate objective of enhancing the welfare of its citizens. Todaro (2005) define economic growth as the increase overtime of an economic capacity to produce those goods and services needed to improve the wellbeing of the citizens by increasing number and diversity. It is a steady process overtime by which the production capacity of the economy brings about rising level of national income

2.2 Theoretical Literature Review

2.2.1 The Mundel – Fleming Theory of Monetary Policy

The inability of the original Keynesian model to link the demand side to the supply side of the economy was however addressed by the Neo-Keynesian models starting with the Hicks ISLM model, which tried to simultaneously solve the product and money markets, and showed income and interest rates as linking variables that clear the two markets. The Keynesian Theory; is based on the presence of unemployment equilibrium in the economy and the issue of short run assumption. The Keynesian analysis believes that there are three motives for holding money; precautionary, transactions and speculative. The demand for precautionary and transactions motives is determined by the level of income and that of speculative motive is determined by the interest rate Today, the ISLM model as extended by Mundell- Fleming (1963) has metamorphosed into a large scale model that links the real and nominal variables.

Mundell was of the opinion that in order to achieve internal balance and external balance simultaneously, there is a need to apply monetary and fiscal policy simultaneously. Internal balance refers to domestic balance, i.e full employment with price stability. External balance refers to equilibrium in the balance of payment, which can be enhanced by economic growth. He highlights the fixed exchange rate so as to achieve equilibrium in the balance of payment since a freely fluctuating exchange rate system external balance is automatically achieved.

In order to achieve external balance, there is need to bring about equality between imports and exports. Expansionary monetary policy can be resorted to by reducing the rate of interest (MPR). It will lead to increase in the level of income (output i.e economic growth) and employment. Contractionary monetary policy can be resorted to by enhancing the rate of interest (MPR) which will lead to reduced investment, income (output) and employment. It will also lead to reduction in imports, i.e it will reduce inflation and deficit in the balance of payments.

2.2.2 The J Curve Theory of Currency Depreciation and Economic Performance

The J-curve effect is a type of diagram where the curve falls at the outset and eventually rises to a point higher than the starting point, suggesting the letter J. While a J-curve can apply to data in a variety of fields, such as medicine and political science, the J-curve effect is most notable in both economics and private equity funds; after a certain policy or investment is made, an initial loss is followed by a significant gain.

An example of the J-curve effect is seen in economics when a country's trade balance initially worsens following a devaluation or depreciation of its currency. The higher exchange rate first corresponds to more costly imports and less valuable exports, leading to a bigger initial deficit or a smaller surplus.

Due to the competitive, relatively low-priced exports, the affected country's exports of the goods in question start to increase as outside demand for the lower-priced option increases. Local consumers also purchase less of the more expensive imports and focus on local goods as the exchange rate makes certain locally produced items more affordable than the imported counterpart. The trade balance eventually improves to better levels compared to before devaluation.

2.3 Empirical Review

Barakchian and Crowe (2015), used conventional VAR method to assess the effects of monetary policy shocks on the economy of USA. After a contractionary monetary policy shock, short term interest rates increased, resulting in aggregate fall. In the two target variables, domestic output and price index responded very slowly. His result confirms results of Romer and Rome (2004). Diego (2010) adopted Structural Autoregressive VAR and his findings show increase in interest rate after contractionary monetary policy in Argentina. The interest shock resulted in temporary increase in output, while the shock has no significant effects on price level. However, the contractionary monetary policy produced an appreciation of the exchange rate, thus, no evidence of exchange rate puzzle.

Khan (2016) analysed the output effects of monetary policy. He examined the relationship between the growth of GDP and different monetary aggregate in 20 Sub Saharan African economies and found that credit growth has a statistically significant relationship with GDP growth than money growth in the countries. Mishra et al (2010) assessed the effectiveness of monetary policy by investigating the dynamics of the short run and long run relationship between money supply and output in India for the period 1950-2009. The estimation of the vector error correction model based on VAR indicated the existence of long run bidirectional causality between money supply and output and unidirectional causality from price level to money supply and output.

Jewaid, Qadri & Ali (2014) empirically assessed the effects of monetary policy, fiscal policy and trade policy on economic growth of Pakistan using annual time series data from 1981-2009. The policy variables are money supply, government expenditure and trade openness. In their methodology, they used error correction method, and found that monetary policy is statistically significant factor of domestic growth and it is more effective than fiscal policy in Pakistan. Also, Mugume (2011) examined the effectiveness of monetary policy transmission in Uganda to analyze the dynamic effect of monetary policy shocks. He used the Structural Vector Autoregressive (SVAR), approach to find the effects of monetary policy innovations on output, proxy by GDP, and inflation, proxy by consumer price index. The results of the estimated impulse-response functions are overall consistent with economic theory.

Chuku (2016) identified the effects of monetary policy on two monetary policy variable targets, domestic output and consumer price index and three alternatives policy instruments (money supply, minimum rediscount rate, and real exchange rate), in Nigeria. He found evidences that monetary policy shocks of money supply have modest effects on domestic output and consumer price index. Similarly, Oluwole and Olugbenga (2015) also found money growth (M2) as the most significant variable affecting output. Also, Adefeso and Mobolaji (2010) adopted Vector Error Correction Estimation (VECM) technique to determine the relative effectiveness of monetary policy and fiscal policy. Their results showed that the effects of monetary policy are stronger than fiscal policy. From the results, money stock is the most significant variable affecting output. This empirical finding confirms earlier findings of Oluwole and Olugbenga

(2015) that money growth (M2) is the most significant variable affecting output and consumer price index.

Also, Olorunfemi and Dotun (2013) assessed the impact of monetary policy on economic performance in Nigeria. Their non policy variable are inflation and domestic growth policy for GDP. They applied the co-integration estimation technique and Vector Error Correction (VECM). They found a negative relationship between interest rate and domestic output, while inflation rate is positively related to interest rate. At variance with this study, Saibu and Oladeji (2008) use GARCH model to assess the effects of fiscal and monetary policy shocks on real output in Nigeria. Their results showed that fiscal and monetary policy shocks had no significant effects on real output, and money supply is not statistically significant factor of output.

Qin & Pilipinas (2013) empirically investigated the effects of monetary policy on macro economy of China. They used three monetary policy instruments; interest rate, reserve ratio and money supply. Two policy targets were also adopted; GDP growth and Consumer price index. They carried out a simulation analysis on their macroeconomic model. Their findings indicated that GDP effect is virtually neutral in the long run when interest rate is used, but statistically significant when reserve ratio and money supply are used. This indicates that the use of interest rate as a monetary policy instrument is the most effective on consumer prices index, but is least effective on GDP growth. Similarly, Gamber and Haks (2005) also used macro economic model and two target variables; GDP and consumer price index. Their policy variable are 3 month treasury bills, a nominal interest rate and they applied simple three equations macro models. They found GDP growth rate and consumer price index are statistically significant. Their result did not correlate with that of Qin et al (2005).

Also, Star (2013) examined the real effects of monetary policy on economic performance in Russia, Ukraine, Belarus and Kazakhstan. He estimated a reduced form VAR, using five monetary policy variables; output, prices, money supply, interest rate and exchange rates. His findings indicate that increase in interest rate is associated with a significant drop in output. In all the Common Wealth of Independent States countries, an unanticipated shock to money stock leads to higher prices. In Ukraine and Belarus, a positive shock to real exchange rate i.e a depreciation, increase in price level relative to where it was suppose to be. Similarly, Cortis and Kong (2007) determined the impact of monetary policy shocks on only one of the target variable; real domestic output, in China. They applied vector error correction method and used impulse response function to trace the effects of interest rate and money supply on output. Their findings show that bank interest rate is the most significant factor of monetary policy; a better indicator when compared to money supply as a tool for monetary policy. However, Mangani (2009) found that exchange rate was the single most important variable affecting consumer price index. He used only one monetary policy target; price index. His result did not conform with earlier result where interest rate is the most significant variable affecting price index. In a related study, Raghavan et al (2009) measured the effects of Malaysian monetary policy using two estimation techniques a Vector Autoregressive (VAR) and Structural Vector Autoregressive Moving Average (SVARMA). The authors compared the impulse responses generated by VARMA models with those generated by VARs for the pre and post crises period. In their findings, VARMA impulses were more significant to those generated by VAR.

Adigwe (2017) in a study on monetary policy and economic growth in Nigeria, used the ordinary least square method to analyze the data between 1980-2010. The result of the study shows that monetary policy represented by money supply exerts a positive impact on GDP growth but a

negative impact on the rate of inflation. The recommendation of the study shows that monetary policy should facilitate a favorable investment climate through appropriate interest rates, exchange rate and a liquidity management mechanism and the money market should provide more financial instruments that satisfy the requirements of the evergreen sophistication of operators. while Olusegun (2016) investigated the effective monetary policy as a recipe for macroeconomic stability in Nigeria, using annual time series data from 1981 to 2014. The paper employed the OLS methodology with all the BLUE assumption. The results show that considering the lending rate magnitude, a 1% increase in RGDP (the proxy for economic growth) is brought about by a 0.86% increase in narrow money supply (M1) a 0.63% increase in broad money supply (M2) a 258% decrease in inflation rate (INFLARATE) a 1276.3% increase in the lending rate (LEDRATE) and a 143.9% increase in gross fixed capital formation. This implies that an increase in the lending rate and other related variables will lead to a significant increase in real GDP, proxy for economic growth in Nigeria. These indicate that indeed monetary policy has an effect on economic stability in Nigeria. Boghebo (2015) studied the monetary policy an economic growth in Nigeria between 1980-2011. The data were extracted from the central bank statistical bulletin with selected macroeconomic variables, such as gross domestic product, inflation and balance of payment, using ordinary least square method and error correction model

2.4 Theoretical Framework

The theoretical framework adopted for this study follows essentially the Neo-Keynesian ISLM framework which suggests that:

National Income identity: $Y = C + I + G - (X - M)$ 1

With the following structural equations:

Money Demand function: $M_d/P = KY + \beta i$, $K > 0, i < 0$ 2

Money supply function : $M_s/P = m_1 B/P + m_2 i$, $m_1, m_2 > 0$ 3

Money market equilibrium : $M_d = M_s$ 4

Where Y is output, C is consumption, I is investment, G is government spending, X is export, M is imports, Yd is disposable income, T is tax, i is interest rate, E is exchange rate, B is external reserves, P is general price level, (price stability).

After substituting the structural equations into equation (1) and (10), we obtain the IS equation and LM equation respectively. Equating the IS equation to LM equation, we obtain the general equilibrium equation for output (Y),;which is expressed in functional form thus:

$Y = f (i, M_s, E, B, P, G_0, T, U)$ 5

Where U represents the parameters in the general equilibrium equation

The explanatory variables in equation (3.4.9c) above are monetary policy instruments and fiscal policy instruments. The monetary policy instruments in the equation, which is the main focus of this research, include i (interest rate also known as Monetary policy rate), E (Exchange rate), Ms (Money supply), B (External reserves). This equation shows how changes in the monetary policy variables (e.g changes in CRR, MPR, Exchange rate) affect macroeconomic policy targets like inflation, output level (GDP). Within this framework, the monetary authority can target the interest rate (MPR), Exchange rate or it can target the money supply using either the interest rate (MPR) or the monetary base as its instrument (and this include required reserves).

3. Methodology

3.1 Data

In line with the objectives of the research work, a single model is formulated from the theoretical framework for the macroeconomics policy target (dependent variables), namely economic growth. Furthermore, the model (linear functions) is specified along in line with the hypotheses. The linear equation is used for the estimation of the coefficients of long and short run equation. In addition, the study introduced structural breaks and break points to the data. The 2006 recapitalization of banks and insurance companies really made the monetary sector, which is a subset financial sector, deregulation a reality. Hence, the structural break was applied to two sub-periods for the model from 1981Q1 - 2006Q4 before recapitalization policy in Nigeria and from 2007Q1 – 2016Q4 after recapitalization policy in Nigeria.

The study used Quarterly time series data from 1981:1 to 2016:4. And these data was sourced from Central Bank of Nigeria (CBN) publications and National bureau of statistic. The first stage in the empirical investigation will be to analyse the time series properties of the data using the unit root (Augmented Dickey-Fuller) test to determine the order and level of difference stationary of the variables on the first order autoregressive process AR(1). The second set of analysis is to determine the co-integrating vectors that span the variables in the models to see if they are integrated of any order. In other words, we test whether the dependent variable and the explanatory variables have long run relationship, that is, whether they are co-integrated. If co-integration is established, it suggests the presence of causality between the independent and dependent variables at least in one direction (Gujarati, 1995).

In order to obtain estimates and results that are consistent and not methodology biased, two econometric estimation techniques will be used. And these are Autoregressive Distributed Lag Model (ARDL) and Vector Error Correction Model (VECM) after necessary test on reliability of data are conducted. The study adopts Autoregressive Distributed Lag (ARDL) approach developed by Pesaran *et.al.* (2001) to estimate equations. The choice of the ARDL is based on several considerations. Firstly, ARDL does not require stationarity of the data. In order words, ARDL can be applied irrespective of whether the underlying regressors are stationary at I(0) or I(1) or a mixture of both. Secondly, it has a small sample property. Thirdly, ARDL provides unbiased estimates of the long run model as well as valid t- statistics even when some of the regressors are endogenous (Harris and Sollis, 2003).

The presence of co-integration forms the basis for Vector Error Correction Model (VECM) specification. The VECM will be designed to capture the short- run deviations that may occur in estimating the long- run co-integration equation (Engle and Granger, 1987). Thus the models will be specified in their explicit stochastic error correction form. Conclusions and findings will be deduced from VECM estimates after being compared with the ARDL estimates. Also, test for structural stability will also be carried out using CUSUM, CUSUMSQ and Chow test. T- statistics and F-statistic will be used to carry out statistical significance at 95% confidence level. Coefficient of multiple determination (R^2) will also be used to judge the strength of the estimated standardized regression equations. Also, Durbin Watson statistic will be used to test for the presence of serial correlation (Autocorrelation), which is also common in time series data.

Standardized regression will be used to find out the comparative or relative impact of the monetary policy instruments (Bank rate, Cash reserve ratio, and Exchange rate) on the target variable (Economic growth). This will be done by computing the Beta coefficients of each explanatory variable (the monetary policy instrument).

3.2 Model Specification

In specifying the empirical model, the study adapts the Neo Keynesian ISLM model (Hick 1937) and Mugume (2011).

Thus, the general functional forms of the model is specified as follows:

$$GDPGR = f (BR, CRR, ER, MS,) \dots\dots\dots 6$$

Where;

GDPGR = Gross Domestic Product Growth Rate

BR = Bank Rate, also known as monetary policy rate (MPR)

CRR = Cash Reserve Ratio

ER = Exchange rate

MS = Broad Money supply

In line with the objective of this study and the dynamic nature of the variables in the models, the comparative impact of bank rate, CRR and Exchange rate on economic growth in Nigeria is examined using Autoregressive distributed lag (ARDL) framework. As earlier said, the study adopts autoregressive distributed lag (ARDL) approach and Vector error correction model (VECM) to estimate equation (3.2.1). The statistic underlying the procedure is the F- statistic in a generalized Dickey – Fuller type regression, which is used to test the significance of the variables under consideration in an unrestricted equilibrium correction model.

Equation (3.2.1) can be stated in econometric forms as well as to reflect the structural break. Following studies by Chow (1960) and Klein (1965), we specified both pooled and structural break models in partial log linear form as follow:

Time period of 1981:1-2016:4 (The pooled period)

$$GDPGR = a_0 + a_1BR + a_2CRR + a_3ER + a_4lnMSt + U \dots\dots\dots 7$$

Time period of 1981:1 – 2006:4 (Period before recapitalisation)

$$GDPGR = b_0 + b_1BR + b_2CRR + b_3ER + b_4lnMSt + U \dots\dots\dots 8$$

Time period of 2007:1- 2016:4 (Period after recapitalisation)

$$GDPGR = c_0 + c_1BR + c_2CRR + c_3ER + c_4lnMSt + U \dots\dots\dots 9$$

The hypotheses to be tested after the structural break are whether the coefficient of the variables after the break is equal to the coefficient of the variables before the break:

$$b_1 = c_1 \quad b_2 = c_2 \quad b_3 = c_3 \quad b_4 = c_4$$

The Assumptions of the above models are:

- i. The Error terms are normally and randomly distributed.
- ii. There is no relationship between successive error term, $E(U_i, U_j)$, where $i \neq j$.
- iii. Absence of serial correlation between the error term and the explanatory variables.
- iv. Expected value of error term is equal to zero.
- v. The variance of the error term is constant.

Following Pesaran et.al (2001), the Autoregressive Distributed lag (ARDL) formats of the above equations are formulated as follow:

$$GDPGR_t = \beta_0 + \sum \delta_0 GDPGR_{t-i} + \sum \delta_1 BR_{t-i} + \sum \delta_2 CRR_{t-i} + \sum \delta_4 \ln MS_{t-i} + e_t \dots\dots\dots 10$$

The specification of a long run relationship that will capture the short run deviations that might have occurred in estimating the long run co integrating equation requires an Error Correction term. Following Pesaran et al (2001) the Error Correction representation of the above ARDL model (3.2.5) is given as:

$$\Delta GDPGR_t = \beta_0 + \beta_1 GDPGR_{t-1} + \beta_2 BR_{t-1} + \beta_3 CRR_{t-1} + \beta_4 ER_{t-1} + \beta_5 \ln MS_{t-1} + \sum \delta_0 \Delta GDPGR_{t-i} + \sum \delta_1 \Delta BR_{t-i} + \sum \delta_2 \Delta CRR_{t-i} + \sum \delta_3 \Delta ER_{t-i} + \sum \delta_4 \Delta \ln MS_{t-i} + e_t \dots\dots\dots 11$$

Where β_0 represents the drift component, Δ is the first difference operator and a, b, c, d, and e are the optimal lag lengths for each incorporated series. $\delta_i : i = 0,1,2,3,4$, are the short run dynamic coefficients, $\lambda : = 1,2,3,4,5\dots$ are the long run multipliers long run multipliers of the models. e_t represents the stochastic term. The terms with the summation signs are used to model the short run dynamic structure.

Finally, the short run dynamic parameters of the model associated with the long run estimates can be obtained by estimating the following Error Correction Models given as:

$$\Delta GDPGR_t = \beta_0 + \sum \delta_0 \Delta GDPGR_{t-i} + \sum \delta_1 \Delta BR_{t-i} + \sum \delta_2 \Delta CRR_{t-i} + \sum \delta_3 \Delta ER_{t-i} + \sum \delta_4 \Delta \ln MS_{t-i} + \lambda ECM_{t-1} + e_t \dots\dots\dots 12$$

Where ECM is the error correction term (representing the residual of the co integrating equation). λ represent the coefficients of the ECM term for model (3.2.7) and its known as speed of adjustment. It shows how quickly the variables converge to equilibrium (i.e. speed of adjustment back to long run equilibrium after a short run disturbance). It should be statistically significant and negatively signed.

4. Result

4.1 Unit Root Test of Stationarity

The data were tested for unit root by using the Augmented Dickey Fuller (ADF test). Non spatiality of time series data has often been regarded as a problem in empirical analysis. Working with non-stationary variables leads to spurious regression result from which further inference is meaningless. The first step is therefore to test for stationarity of the variables using Augmented Dickey Fuller unit root test: Table 4.1.1 below shows the unit root test result

Table 4.2: Augmented Dickey Fuller test for Unit Root

Variables	ADF Static	Critical Value 1%	Critical Value 5%	Critical Value 10%	Order of Integration
$\Delta GDPGR$	-11.148	-4.0298	-3.4418	-3.1455	I(1)
$\Delta \ln MS$	-9.6360	-4.0249	-3.4422	-3.1457	I(1)
ΔEXR	-10.7767	-4.0239	-3.4418	-3.1455	I(1)
ΔCRR	-9.2621	-2.5816	-1.9431	-1.6152	I(1)
ΔBR	-6.5092	-4.0259	-3.4427	-3.1460	I(1)

Source: Author’s computation

The ADF Statistic of each of the variables is greater than the critical values (1%, 5% and 10%). It shows that all the series are I(1) variable and significant at 1 %. This reveals that the data does not contain I(2) series, hence provides support for the use of ARDL model.

4.3 Test for Co integration

4.3.1 Co-integrating result before structural break for the model (1981:1 to 2006:4)

Table: 4.3.1: Co-integrating Result Before Break

Hypothesized		Trace	0.1	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.350985	107.5399	84.37817	0.0012
At most 1 *	0.260340	65.17462	60.08629	0.0387
At most 2	0.172308	35.62128	39.75526	0.2204
At most 3	0.134675	17.08811	23.34234	0.4084
At most 4	0.029281	2.912391	10.66637	0.8868

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

The table 4.3.1 above reports the co integration test results before the structural break for model 1. The trace statistic test indicates 2 co-integrating relationship or vectors at 10% level of significance. To determine the co- integrating test, we compare the trace statistic to the critical value. The trace statistics value (65.1746) is greater than the critical value (60.08629). Thus the VECM is estimated using 2 co-integrating vectors.

4.3.2 Co-integrating result after structural break for the model (2007:1 to 2016:4)

Table: 4.3.2: Co-integrating Result After Break

Hypothesized		Trace	0.1	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.797533	134.6671	84.37817	0.0000
At most 1 *	0.651054	70.78005	60.08629	0.0117
At most 2	0.337684	28.66650	39.75526	0.5821
At most 3	0.195467	12.18600	23.34234	0.7990
At most 4	0.083467	3.486272	10.66637	0.8144

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

The table 4.3.2 above reports the co integration test results after the structural break for model 1. The trace statistic test indicates 2 co-integrating relationship or vectors at 10% level of significance. To determine the co- integrating test, we compare the trace statistic to the critical value. The trace statistics value (70.78) is greater than the critical value (60.08). Thus the VECM is estimated using 2 co-integrating vectors.

4.4: Test for Structural Stability of Model

The Central Bank of Nigeria in 2006 embarked on extensive financial system and monetary policy reformation with the recapitalization of banks and non-banks (financial institutions). Consequent to this reform, this study carried out structural stability test to determine the structural break in our models. A structural change is said to have taken place when a change is observed in the regression parameters of the estimated models. Any structural break is accompanied by the change in relevant model coefficients. Such changes can be shifted in intercepts or slopes (or both). Since the parameters of econometrics models form the basis of optimal decision rules and in turn determines policy decisions, these emphasised the importance of parameters stability in empirical studies. Also, ignoring structural changes in empirical studies can lead to false conclusion and wrong policy recommendation.

This study applied three stability tests: Chow test, Cumulative sum of recursive residuals (CUSUM) and Cumulative sum of the square of recursive residual (CUSUMSQ). Both CUSUM and CUSUMSQ are applied on the residuals of all variables of VECM model. If the plot of CUSUM and CUSUMSQ statistics stays within the critical bound of 95% level of significance, the null hypothesis is that coefficients in the error correction model cannot be rejected. If any of the lines crosses, the null hypothesis of coefficient constancy at 95% level of significance will be rejected. That means the equation parameters are considered unstable (structural break presence), if the whole sum of recursive error gets outside the two critical lines of both test; while in Chow test, the F statistic is compared with the theoretical at 5% level of significant and $(N-2K, K)$ degree of freedom. If the F statistic is greater than the critical values, we reject the null hypothesis of no structural break.

Figure 4.4.1A

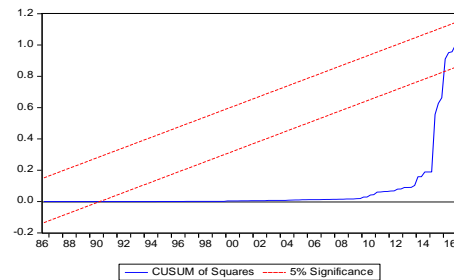


Figure 4.4.1 B

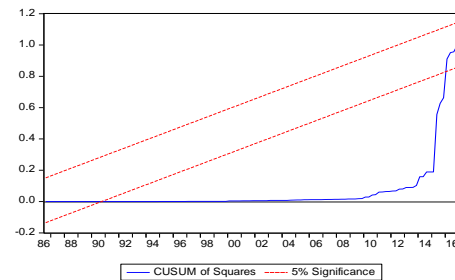


Table 4.4.1 Chow Breakpoint Test: 2006Q1

F-statistic	1.204255	Prob. F(5,133)	0.3106
Log likelihood ratio	6.331733	Prob. Chi-Square(5)	0.2753
Wald Statistic	6.021275	Prob. Chi-Square(5)	0.3042

Source: Author's computation

From figure 4.4.1A and B above it can be seen that the plot of the CUSUM and CUSUMSQ statistics do not stay within the critical bound of 95% level of significance, hence, the null hypothesis of coefficient constancy at 95% level of significance is rejected. This is also supported by the chow test. From table 4.4.1, since the F-statistic (1.204) is greater than the critical value (0.3106), we reject the null hypothesis of no break at specified breakpoints. Therefore, model (economic growth) shows that there was structural break and the result is accepted. The study will proceed to estimate the two sub periods i.e 1981:1 to 2006:4 and 2007:1 to 2016:4

4.5 Presentation and interpretation of Regression Results

4.5.1 ARDL Results for model 1 before break (1981:1 to 2006:4)

Table: 4.5.1: ARDL Short run And Long Run Results before break

Variable	Coefficient	Std. Error	t-Statistic	Prob.
<i>Short run coefficients</i>				
D(GDPGR(-1), 2)	-0.207322	0.242202	-0.855985	0.3945
D(GDPGR(-2), 2)	-0.392025	0.186266	-2.104651	0.0384
D(GDPGR(-3), 2)	-0.279761	0.129786	-2.155564	0.0340
D(CRR, 2)	6.047410	13.934147	0.433999	0.6654
D(BR, 2)	2.803886	4.202857	0.667138	0.5066
D(EXR, 2)	-4.311143	1.708604	-2.523310	0.0009
D(EXR(-1), 2)	0.283379	1.341317	0.211269	0.8332
D(EXR(-2), 2)	-6.339874	1.335594	-4.746857	0.0008
D(EXR(-3), 2)	-5.431457	1.441031	-3.769147	0.0003
D(LNMS, 2)	0.319089	0.129276	2.468273	0.0157
D(LNMS(-1), 2)	-0.351784	0.146221	-2.405843	0.0184
D(LNMS(-2), 2)	-0.181192	0.162991	-1.111669	0.2695
D(LNMS(-3), 2)	0.487032	0.184972	2.632999	0.0101
CointEq(-1)	-0.881742	0.281174	-3.135928	0.0024
Cointeq = D(GDPGR) - (6.8585*D(CRR) + 3.1799*D(BR) + 5.9882*D(EXR) + 0.7161*D(LNMS) + 12.6891)				
<i>Long Run Coefficients</i>				
D(CRR)	6.858481	15.638897	0.438553	0.6621
D(BR)	3.179940	4.959014	0.641244	0.5232
D(EXR)	5.988239	3.938629	1.520387	0.0023
D(LNMS)	0.716056	0.208846	3.428629	0.0010
C	12.689111	12.196859	1.040359	0.3012

Source: Author's Computation

From the coefficients of the estimated ARDL model in table 4.5.1 above, there is a positive relationship between bank rate and economic growth both in the short run and long run. This is not theoretically in line and it is different from ours a-priori expectation. However, these results are not statistically significant because the t-statistic is less than the critical value. This result is different from the finding of Cortis and Kong (2007), which shows that bank rate is the most significant factor of growth. But this result correspond with the finding of Qin et al (2009), which stated that the use of interest rate has no significant impact on economic growth. Also, in the short run, current value of Exchange rate, with second and third lag values have negative and statistically significant relationship with economic growth. This is theoretically in line for an economy that is import dependent like Nigeria. The third lag value of exchange rate is also statistically significant. The negative relationship between economic growth and exchange rate at various lags means that the persistent devaluation of naira is inimical to economic growth in Nigeria. And the statistical significance of the estimates shows how sensitive the Nigerian economy is to exchange rate. Also, this shows that exchange rate as a monetary policy instrument, has a significant impact on economic growth in Nigeria in the short run. This result is

similar to that of Chuku (2009), Okwu et al (2011), but contrary to that of Mugume (2011). However, from the long run ARDL result, there is a positive relationship between exchange rate and economic growth, and the effect is statistically significant at 10% (critical value at 10% is 1.289 which is less than the t- statistic 1.5204). Cash Reserve Ratio (CRR) has positive relationship with economic growth both in the short run and long run. This is not theoretically in line and it is different from our a priori expectation. However, the result is not statistically significant both in short run and long run. This shows that economic growth is not sensitive to changes in CRR in Nigeria. The coefficient of the error correction term had the right sign and it is significant at 5%.

4.5.2 ARDL Results for model 1 after break (2007:1 to 2016:4)

Table: 4.5.2: ARDL Short run And Long Run Results after break

Variable	Coefficient	Std. Error	t-Statistic	Prob.
<i>Short Run Coefficients</i>				
D(GDPGR(-1), 2)	-0.463169	0.401100	-1.154749	0.2601
D(GDPGR(-2), 2)	-0.798489	0.347721	-2.296350	0.0311
D(GDPGR(-3), 2)	-0.686465	0.270381	-2.538883	0.0183
D(CRR, 2)	58.637722	21.801205	2.689655	0.0131
D(CRR(-1), 2)	-34.707594	21.930696	-1.582603	0.1272
D(CRR(-2), 2)	-35.613788	23.241791	-1.532317	0.1391
D(CRR(-3), 2)	77.335526	34.026316	2.272815	0.0327
D(BR, 2)	-496.152343	219.862434	-2.256649	0.0338
D(EXR, 2)	-16.124361	9.943921	-1.621529	0.0492
D(LNMS, 2)	0.594813	0.473681	1.255725	0.2218
D(LNMS(-1), 2)	0.712480	0.486895	1.463313	0.1569
D(LNMS(-2), 2)	0.317664	0.538560	0.589840	0.5610
D(LNMS(-3), 2)	1.538261	0.539568	2.850915	0.0090
CointEq(-1)	-0.583731	0.475423	-1.227813	0.2319
Cointeq = D(GDPGR) - (102.8338*D(CRR) -849.9679*D(BR) -27.6229				
*D(EXR) -3.8330*D(LNMS) + 2179.9425)				
<i>Long Run Coefficients</i>				
D(CRR)	102.833758	79.891431	1.287169	0.2108
D(BR)	-849.967890	854.813275	-0.994332	0.3304
D(EXR)	-27.622946	7.210671	-3.830842	0.5642
D(LNMS)	-3.833003	4.528072	-0.846498	0.4060
C	2179.942531	2038.746060	1.069257	0.2960

Source: Author's Computation

From the estimated ARDL model presented in table 4.5.2 above, the current value of CRR and third lags value have a positive relationship with economic growth and the result is statistically significant at 5%. But, CRR at both lags 1 and lags 2 have a negative relationship with economic growth. This is in line with the a priori expectation. But this relationship is not statistically significant at even 10% (because the t-statistics are less than the critical value i.e 1.68). This also means that this instrument does not have significant impact on economic growth in Nigeria in this period. Bank rate has a negative relationship with economic growth, this is theoretically in line.

And the result is statistically significant. This result confirms the earlier finding of Barakchian and Crowe (2010) and Star (2005) that showed that increased in interest is associated with a significant drop in output. This result is different from what was obtained in the model before structural break.

Exchange rate has a negative relationship with economic growth, and this relationship is statistically significant at 10%. This result is confirmed by the finding of Mangani (2009), which state that exchange rate was the single most important variable affecting output level and consumer price index. This is the same with the result obtained in the model before structural break, where exchange rate in lags 2 and 3 period has a negative and significant relationship with economic growth. This negative relationship between exchange rate and economic growth points to the fact that depreciation of naira does not favour economic growth in Nigeria. Practical experience shows that the results are expected because depreciation of exchange rate only favours countries with strong domestic production base for tradable country.

From the long run ARDL estimates, only exchange rate has significant, but negative relationship with economic growth. Although bank rate has the correct sign, the relationship is not significant. From the long run ARDL estimated model before and after structural break, exchange rate has a statistical significant but negative relationship with economic growth.

4.5.3 VECM Results before structural break (1981:1 to 2006:4)

4.5.3.1 Short run Estimates of model 1 before structural break

The vector error correction regression estimates of the short run dynamic specification for the policy target variable economic growth model (model 1) before structural break is shown in Table 4.5.3.1 below.

Table 4.5.3.1: Results of Short Run VECM Before Break

Regressor	Coefficient	Standard Error	T-statistics
Δ GDPGR(-1)	-0.7894	0.1357	-5.8194
Δ GDPGR(-2)	-0.8579	0.1508	-5.6868
Δ GDPGR(-3)	-0.4903	0.1506	-3.2541
Δ GDPGR(-4)	-0.0218	0.1251	-0.1745
Δ CRR(-1)	-16.4199	18.4018	-0.8923
Δ CRR(-2)	-17.4586	18.8220	-0.9275
Δ CRR(-3)	-9.3479	17.1832	-0.5440
Δ CRR(-4)	-6.9818	13.9269	-0.5013
Δ BR(-1)	5.2987	6.8628	0.7721
Δ BR(-2)	4.3253	6.5652	0.6588
Δ BR(-3)	2.7967	5.9243	0.4720
Δ BR(-4)	2.7145	4.6355	0.5855
Δ EXR(-1)	-0.5559	1.8270	-0.3043
Δ EXR(-2)	-4.2087	1.9562	-2.1514
Δ EXR(-3)	-5.5425	1.9599	-2.8279
Δ EXR(-4)	3.7618	1.7309	2.173
Intercept	5.2123	25.3214	0.2058
Ecm1	-0.08014	0.00951	-8.4367
R ² = 0.6971			
Adjusted R ² = 0.6082 F- statistics = 7.84			
Akaike A/C = 12.116 Schwarz sc = 12.7			

Source: Author's computation

From the results in table 4.5.3.1 above, CRR has negative relationship with economic growth from lags 1 to 4. This conforms to the a priori expectation but they are not statistically significant even at 10 %. This shows that CRR does not affect economic growth in this period. These results correspond with what was found in the ARDL estimates. And it correlates with the finding of Qin et al (2004), which showed that reserve ratio is for addressing inflation and not GDP. Bank rate from lags 1 to lags 4 has a positive relationship with economic growth. This is also contrary to the a priori expectation. And the result is not statistically significant. This result conforms to the ARDL result. However, this result is contrary to the findings of Star (2005), which state that increase in interest rate is associated with a significant drop in output. This shows that in the short run, bank rate as a monetary policy instrument does not affect economic growth in Nigeria. Also, Exchange rate from lags 2 to lags 4 has a negative relationship with economic growth and the result is statistically significant at 10%. This is consistent with what was obtain in the ARDL estimates. This result is similar to that of Khan (2010) which analyzed the output effect of exchange rate. However, Exchange rate at lags 1 has a negative but significant relationship with economic growth. The coefficient of error correction term had the right sign and it is significant.

The coefficient of determination (R^2) shows that the model has a good fit because 69.71% variation in economic growth is explained by the estimated regression equation. And all the regressors are simultaneously different from zero because the R^2 is statistically significant, since the F-statistics is greater than the critical value at 5%.

4.5.3.2 Long run Estimates of model 1 before structural break

Table 4.5.3.2: Results of Long Run VECM Before Break

Regressor	Coefficient	Standard error	T statistics
Δ CRR(-1)	-193.3518	56.0058	-3.4523
Δ BR(-1)	85.3578	17.8610	4.7790
Δ EXR(-1)	-13.60647	5.6623	-2.40297
Δ LnMS(-1)	-2.1643	0.5768	-3.7517
Intercept	39.806		

Source: Author's computation

The long run estimates of the VECM shows that CRR has a negative relationship with economic growth and the result is statistically significant. This is in line with the monetarist view. This shows that in the long run, CRR may be a significant monetary policy instrument that can be used by the monetary authority to achieve economic growth; however, this result is different from what was obtained from the long run ARDL estimates. Bank rate has a positive and significant relationship with economic growth and it is statistically significant, this result is contrary to most empirical work earlier reviewed; Olorunfemi and Dotun (2008), Diego (2010) and Cortis and Kong (2007). Exchange rate has negative relationship with economic growth and the relationship is statistically significant. This result is consistent with what was obtained in the long run ARDL estimates.

4.5.3.3 VECM Results after structural break (2007:1 to 2016:4)

Table 4.5.3.4 Short Run Estimates of Model 1 after Structural Break

Regressor	Coefficient	Standard Error	T-statistics
Δ GDPGR(-1)	-0.1785	0.2958	-0.6034
Δ GDPGR(-2)	0.01679	0.3153	0.05327
Δ GDPGR(-3)	0.03519	0.38075	0.09244
Δ GDPGR(-4)	0.271326	0.41811	0.64894
Δ CRR(-1)	1.079721	40.3682	0.02675
Δ CRR(-2)	3.11138	39.6533	0.07846
Δ CRR(-3)	39.63406	40.3848	0.98141
Δ CRR(-4)	-40.17960	54.0349	-0.7436
Δ BR(-1)	101.4149	245.861	0.41249
Δ BR(-2)	166.7	310.472	0.53697
Δ BR(-3)	-101.732	320.990	-0.3169
Δ BR(-4)	-65.8008	279.345	-0.2355
Δ EXR(-1)	16.3452	40.3774	0.40481
Δ EXR(-2)	76.7467	40.2581	1.90636
Δ EXR(-3)	-35.4846	12.6492	-2.80528
Δ EXR(-4)	-70.9475	40.9470	-1.73266
Intercept	30.4365	276.967	0.10989
Ecml	-0.39966	0.18644	-2.1436

$R^2 = 0.7507$ Adjusted $R^2 = 0.4599$ F- statistics = 2.5817
 Akaike A/C = 18.01616 Schwarz sc = 18.9450

Source: Author's computation

From the results in table 4.5.3.4 above, CRR has positive relationship with economic growth from lag 1 to lag 3, excepts that of lag 4 that is negative. Only the CRR at lag 4 conforms to the a priori expectation. However, they are all individually not statistically significant even at 10%. This shows that CRR does not affect economic growth in this period. This is confirmed by the finding of Qin et al (2005). They said that CRR is a significant variable for inflation control. Bank rate from lags 1 to lags 2 has a positive relationship with economic growth and this is also contrary to the a priori expectation. But bank rate from 3rd lag to 4th lag has negative relationship with economic growth, but the relationship is as well, not statistically significant. This result conforms to the ARDL result. This shows that in the short run, bank rate does not affect economic growth in Nigeria. Also, Exchange rate at lags 1 has a positive relationship with economic growth but the result is not statistically significant even at 10%. However, Exchange rates at lags 3 and lags 4 have a negative and significant relationship with economic growth. This corroborate with the fact that depreciation of naira does not support economic growth in Nigeria and also the significance of exchange rate as a monetary policy instrument. The coefficient of error correction term had the right sign and it is statistically significant.

The coefficient of determination (R^2) shows that the model has a good fit because 75.07% variation in economic growth is explained by the estimated regression equation. And all the

regressors are simultaneously different from zero because the R^2 is statistically significant, since the F-statistics is greater than the critical value at 5%.

However, as earlier said, the short run does not tell us much about the effects of monetary policy instruments on macroeconomics policy targets because they are adjustment mechanism toward the long run equilibrium. The usefulness of the error correction models produce better short run forecast and hence provides the short run dynamics essential to obtain long run equilibrium.

4.5.3.5 Long run Estimates of model 1 after structural break

Table 4.5.3.5: Results of Long-run VECM after Break

Regressor	Coefficient	Standard error	T statistics
$\Delta CRR(-1)$	126.674	47.0380	2.69302
$\Delta BR(-1)$	-90.9753	562.556	-0.16172
$\Delta EXR(-1)$	113.3461	49.244	2.30172
$\Delta \ln MS(-1)$	6.024267	1.92043	3.13693
Intercept	-182.8465		

Source: Author's computation

The long run estimates of the VECM after structural break, shows that CRR has a positive relationship with economic growth and the result is statistically significant. Bank rate has a negative relationship with economic growth, this is theoretically inline, but it is not statistically significant. Exchange rate has positive relationship with economic growth and the relationship is statistically significant. This finding is the same with that of Raghauan et al (2009).

4.5.3.6 Summary Results before and after Structural Break

From the analysis of model 1 for both alternative sub periods, the coefficients of the estimated regressions (for both ARDL and VECM) are not the same in the two sub periods. There are significant changes in the coefficients of the policy variables. This means that the 2006 structural reform in the financial sector in Nigeria brought changes in bank rate, CRR, exchange rate and also changes in economic growth.

Also, from the two sub periods CRR does not have any significant effects on economic growth in short run, but it has effects in the long run. In the short run, in both sub periods, bank rate does not have significant effect on economic growth. Also in the long run, bank rate does not have significant effects on economic growth in both sub periods. In the short run and long run, for both sub periods, exchange rate has a consistent negative and significant effect on economic growth in Nigeria.

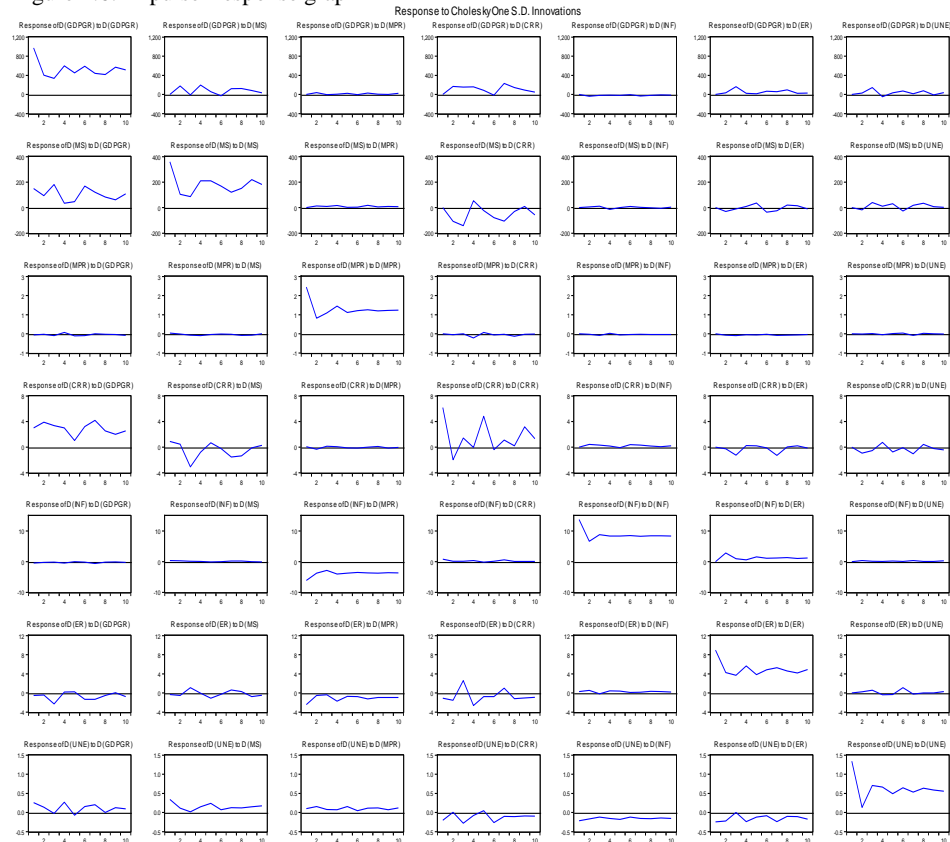
4.6 Impulse Response Analysis of Monetary Policy Instruments on Economic Growth

The graphs display the effects (impulse response) of a one – standard deviation monetary policy shock defined as an exogenous, unexpected and temporary rise in the bank rate, cash reserves ratio, exchange rate and money supply. Each panel illustrates the response of the target variable (economic growth) to its own one – standard deviation changes which corresponds to a positive shock, the response of the target variable to a one – standard deviation changes in all the monetary policy instruments (corresponding either to a positive or a negative shock), the response of each policy variable to its own one – standard error innovation or changes, and the response of each policy variable to other policy variables.

The analysis holds that a zero value is an indication of non – effect of monetary policy shock on the target variables and as a result, the target variable continues on the same path it would have

followed, had there been no policy shocks in the system. A positive or negative value thus indicates that shocks would cause the variable to be above or below its natural path. The solid lines depict the estimated effects, while the dashed lines show the boundaries of a 95% confidence interval. The solid line is the point estimate while the dotted lines represent a one – standard error confidence bound around the point estimate. The size of the shocks and monetary policy change or innovation is measured by standard deviations of the corresponding orthogonal errors obtained from the model estimation. The impulse responses estimated for the three models support widely held conventional views of many macroeconomic dynamics.

Figure 4.6: Impulse Response graph



4.6.1 Analysis of the Impulse Responses Shock to Economic Growth

The responses of economic growth to a one standard deviation shock to monetary policy rate (MPR), cash reserve ratio (Crr) and exchange rate are presented in figure 4.6 above. It is evident that the response of GDP growth rate to an expansionary shock in the MPR in Nigeria is not favourable and it is not statistically significant. The estimated effects line (impulse response line) remains almost on the zero value line or line of no – effect. This indicates a non – effect of

monetary policy shock on the target variable (i.e economic growth), which also means that the target variable continues on the same path it would have followed had there been no policy shocks in the system. This indicates that output level does not respond steadily to changes in the MPR in Nigeria. This result corroborate those of Chuku (2009) and Mugume (2011). It is also supported by the findings from the ARDL and VECM analysis carried out in section 4.5 above. One could have expected the increase in MPR to affect GDP growth rate negatively and the decrease in MPR to affect GDP growth rate positively through investment. The explanation could be credited to the fact that in Nigeria, MPR has no significant effects on Deposit money banks lending rate.

Measuring the economic growth responses to monetary innovation in Crr, the impulse – response results graphically revealed a sluggish response of GDP growth rate to a positive Crr shock. In the 1st and 5th quarter , GDP growth rate has zero response. The responses became positive but weak after the 6th quarter. And the response remains persistently decreasing from the 7th quarter. This shows that output level in Nigeria does not respond to changes in Crr. This is also in line with the findings from the ARDL and VECM analysis.

The impulse response also shows that GDP growth rate also respond positively but sluggishly in the entire periods except in the 5th and 9th quarter, to shocks in the foreign exchange rate. At the early stage, i.e 1st quarter, output level was not responsive to the exchange rate depreciation policy because the impulse response line was on zero line. The response of output level slightly improves from the 3rd quarter but with a down turn at the 5th quarter. GDP growth rate response to exchange rate shock after the 5th quarter has been persistently positive but the response has not being significantly impressive. Practical experience shows that the results are expected because depreciation of exchange rate is expected to favour countries with strong domestic production base for tradable in the country. Though the output response to shocks in exchange rate is insignificant, it is theoretically consistent for an import dependent economy like Nigeria not to promote currency depreciation policy. Also, output level is relatively sluggish in response to shocks in monetary policy variables.

4.7 Variance Decomposition Analysis for Economic Growth

The results of the variance decomposition reveal the dynamic behavior of the variables in the ARDL and VECM system of equations. In particular, we based the analysis of variance decomposition on the forecast error variance in order to capture the direction of which variables effect is larger, so that we can subsequently make a distinction on the importance or significance of the variables in the system.

From table 4.7.1, the result of variance decomposition of GDP growth rate at the 9th period indicates that about 88% of the forecast error variance of GDP growth rate is accounted by the previous growth rate of GDP; while the remaining 10.22% is accounted for by the shocks in the monetary policy variables which include MPR, Crr, and Exchange rate. Out of this 10.22% variation in GDP growth rate, MPR accounts for only 0.10%, this is relatively very insignificant. Crr accounts for 5.17% variation in GDP growth rate, while exchange rate accounts for only 1.45%.

Table 4.7.1: Results of Variance Decomposition of GDP Growth Rate

Period	S.E.	D(GDPGR)	D(MS)	D(MPR)	D(CRR)	D(INF)	D(ER)	D(UNE)
1	971.2218	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	1082.217	94.43966	2.690427	0.133788	2.441626	0.113665	0.098840	0.081996
3	1164.506	89.97243	2.332067	0.117018	3.799137	0.127056	2.033223	1.619072
4	1334.964	88.56955	3.962903	0.091221	4.315503	0.109025	1.578926	1.372872
5	1414.042	89.15638	3.709804	0.115543	4.206462	0.114811	1.417404	1.279591
6	1534.725	90.33014	3.186641	0.099284	3.581463	0.097995	1.387411	1.317071
7	1619.237	88.53315	3.428004	0.120651	5.226671	0.128698	1.369959	1.192867
8	1686.982	87.63991	3.686105	0.112332	5.519439	0.133200	1.597480	1.311538
9	1785.618	88.48863	3.496617	0.100271	5.173770	0.121720	1.446111	1.172882
10	1859.743	89.19447	3.251948	0.110974	4.841539	0.118974	1.356718	1.125380

Source: Author's computation

4.8 Comparative Impact Analysis of Monetary Policy Instruments using Standardize Regression

This is done in order to achieve the fourth objective of this research work which is to rank the monetary policy instruments in term of their comparative effectiveness in achieving the selected macroeconomic goals in Nigeria. This analysis is carried out using standardize regression. The size of the estimated coefficients of the policy variables which is called beta coefficients is the basis for the comparative impact analysis. Unlike the impulse response and variance decomposition analysis, the explanatory variables in the standardize regression for each model will be limited to the identified monetary policy instruments.

4.8.1 Results of the estimated standardized regression

Table: 4.8.1 Standardized Regression Result

Regressors	Coefficient	Stan. error	T- ratio	probability	Beta coeff.
EXR	71.559	9.836	7.27	0.000	0.7536
CRR	204.419	19.34	10.57	0.000	0.4394
MPR	112.94	58.63	1.93	0.056	0.7482
InMs	-411.9	275.81	-1.49	0.138	-0.1510
intercept	-2055.69	1157.88	1.93	0.078	

$R^2 = 0.8118$, Adjusted $R^2 = 0.8064$, F- statistics (4, 139) = 149

Source of table: Authors computation

From table 4.8.1 above, the estimated standardized regression is well behaved because 81.18% variation in economic growth is explained by the estimated regression equation. The model has a good fit and it is statistically significant at 5% since the F –statistics (149) is greater than the critical value (2.37). This means that all the estimated coefficients are all simultaneously different from zero. The results show that if the standardized exchange rate increases by one standard deviation, on the average, the standardized GDP growth rate increases by about 0.7537 standard deviation, holding other factors constant. Also, if the standardized CRR increases by one standard deviation, on the average, the standardized GDP growth rate increases by about 0.4394 standard deviation, holding other factors constant. Also, if the standardized monetary policy rate (MPR), also known as bank rate increases by one standard deviation, on the average, the standardized GDP growth rate increases by about 0.0748 standard deviation, holding other factors constant.

Exchange rate and CRR are individually statistically significant. The highest beta coefficient of the policy variables is exchange rate which is 0.7537. This means that exchange rate as a policy instrument, has the greatest impact or effect on achieving economic growth in Nigeria. The next in the rank is CRR, while the last within the scope of the study is MPR which beta coefficient is only 0.0748.

4.9 Policy Implications of Findings

The results of the data analysis generated vital issues that concern policy evaluation and hence a reliable guide for effective monetary policy implementation in Nigeria. Monetary innovations are not all neutral, it rather depends on the monetary policy instruments that are been used.

Firstly, the central bank interest rate i.e monetary policy rate which is also known as bank rate does not have significant impact on the output level in Nigeria. This could be attributed to the high interest rate which is excessively higher than the bank rate. The high gap between interest rate or lending rate and the monetary policy rate (i.e non sensitivity of interest rate to monetary policy rate) has made this instrument a non veritable policy instrument for achieving economic growth. Also, cash reserve ratio does not have consistent significant impacts on the output level. This may also be due to the non sensitivity of interest rate to CRR. However, exchange rate has a consistent significant impact on the output level in Nigeria. This is expected of a country that import almost every product in the market, but export just very few products. More than 95% of the country's total exports are made up of oil and gas. As a result, the inflow of export receipts is highly dependent on oil prices, and hence, on the performance of the oil sector. In effect, external shocks are often transmitted to the domestic economy through oil price shock which eventually affect the exchange rate. The recent economic recession in Nigeria can be traced to exchange rate problem.

5. Conclusion and Recommendation

The critical need for the achievement of sustainable economic growth, a single digit inflation rate and massive reduction in unemployment rate in Nigeria cannot be over emphasized. The study shows the empirical facts about monetary policy instruments that monetary authority can deploy to achieve these objectives. Also, the study shows the empirical facts that not all the monetary policy instruments are effective tools in macroeconomic management in Nigeria.

Overall, the study found that economic growth responds sluggishly and negatively to a positive shock in cash reserve ratio and monetary policy rate and their impacts on economic growth are not significant in the short run. However, in the long run, cash reserve ratio has a significant impact on economic growth, while monetary policy rate does not have significant impact on economic growth even in the long run. The reasons why the output level in Nigeria is not sensitive to monetary policy rate may be due to the non statistical significant correlation between monetary policy rates and deposit money banks lending rate which is the transmission through which monetary policy rate should affect economic growth. With efficient response of money stock to adjustment in cash reserve ratio, cash reserve ratio may become a significant monetary policy tool to achieve sustainable economic growth in Nigeria. Although, the response of economic growth to positive shocks in exchange rate is not entirely sluggish, the relationship is negative and statistically significant. In both short run and long run, exchange rate has negative and significant impact on economic growth. The negative relationship means that the depreciation of naira affects Nigeria output level negatively. Practical experience shows that the results are expected because depreciation of exchange rate is not expected to favour countries with poor or weak domestic production base like Nigeria. However, since exchange rate has

significant impact on economic growth, combined with the present structure of Nigeria economy, revaluation of naira (exchange rate revaluation), will surely promote drastic increase in output level in Nigeria.

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Analysis of Debt Financing on Corporate Financial Performance

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Abstract

Series of efforts by managers and finance providers have focused on an appropriate mixture of debt and equity as a wrong mix which would impact on the performance and ultimate survival of the company. This study therefore, investigates the impact of debt financing on the performance of non-financial companies listed in the Nigerian Securities Exchange (NSE). To achieve this objective, secondary data from the annual reports and financial statements of 41 non-financial listed companies for the period of 2015-2018 were used. Panel data regression results revealed that debt financing represented by Total debt ratio has opposing significant impact on performance of companies as measured by ROCE and EPS. The results also revealed that although a negative relationship exists between total debt ratio and performance measures of ROCE and EPS, the relationship with EPS is an insignificant one. The study concludes that debt financing has a significant impact on the financial performance of non-financial companies in Nigeria. The study therefore recommends that managers of listed non-financial companies should reduce the reliance on long term debt as a source of finance in order to enhance performance. Also effective financial management should be put in place by managers which should identify viable investment opportunities, implement and adequately allocate long term debt finance among the competing opportunities. Continuous monitoring is essential to ensure that the financial objective (ROCE) of the company is achieved which in turn would lead to an increase in the value of the company (EPS).

Keywords: Debt Financing, Performance, Manufacturing Companies

JEL Classification: F34, G32, H63, L6

1. Introduction

The importance of financing decisions cannot be over emphasised since many of the factors that contribute to business failure can be addressed using strategies and financial decisions that drive growth and the achievement of organizational objectives. The finance factor is the main cause of financial distress hence, the need for effective financial management which involves the planning and control of the financial affairs of the organization to ensure that it achieves its objectives (particularly its financial objectives). Effective financial management decision involves; how much finance the business needs for its day-to-day operations (working capital financing) and for longer-term investment project (capital investments); where the finance would be obtained from (debt or equity) and whether it should be long term (debentures, loan stocks or finance lease) or short term (Bank overdrafts, trade supplies, operating lease)(Mwangi, Makau&Kosimbei, 2017).

How an organization is financed is of paramount importance to both the managers of the firms and providers of funds. This is because if a wrong mix of finance is employed, the performance and survival of the business enterprise may be seriously affected (Osuji&Odita, 2015).

Capital structure decision is a crucial decision in corporate finance for almost all enterprises in the world. It consists of debt and equities with proportions that differ between firms based on many factors and variables which includes market forces, type of industry, internal policies of the firm, size of the firm, the amount needed, cost of capital, duration, flexibility, repayment, profitability, tax implication of such capital, and impact on financial performance. Both types of financing are associated to varying degree of costs, risk, control and benefits (Gharaibeh, 2018). Advantages in using debt vary; it provides a deduction on corporate tax returns (at least in jurisdictions in which corporate taxes are levied) on the interest paid; it is not dilutive from shareholders standpoint; the cost of debt is generally less than that of equity to the firm. However, using debt financing increases corporate risk level (financing risk). Additionally, the borrowing firm has to meet loan covenants and assets may be held as collateral by creditors. Finally, agency costs between creditors and shareholders may increase.

The risk to shareholders is generally more than that to lenders as payment of debt takes precedence over payment of equity in law in the context of liquidation. More prosaically, bankers collect interest and amortized return of capital before shareholders can get a distribution of net income (if any). Payment of debt is required by law regardless of a company's profit margins. (Mwangi, 2017). Financial managers as well as some other stakeholders (investors and policy-makers) of all firms around the globe conceivably will want to know the proper mix of debt and equity (capital structure) that maximizes a firm's performance. In particular, they need to identify the relationships between financing decisions and company performance. This may vary by country, by business environment, by sector, by company, or even by time.

From the foregoing, it is therefore important to understand how firm's financing choice affects their performance. It is evidently clear that both internal (firm specific) factors and external (macroeconomic) factors could be very important in explaining the performance of firms in an economy and ultimately its survival. While determinants of the choice between debt and equity are well documented and, to a large extent long established, paucity of research exists on the impact of various debt sources on firm value and performance. Thus, thereed to examine the impact of debt financing on the financial performance of listed Nigerian companies. Specifically, the study (i) examined the relationship between the gearing ratio and financial performance of companies in Nigeria and (ii)examined the impact of Interest coverage ratio on the financial performance of companies in Nigeria. The study hypothesized that:

H_{o1} : There is no significant relationship between Gearing ratio and financial performance of companies in Nigeria;

H_{o2} : Interest coverage ratio does not have any significant impact on the financial performance of companies in Nigeria.

The next section is literature review. This is followed by methodology and discussions of findings. The last section covers the conclusion and recommendations of the study.

2. Literature Review

2.1 Conceptual Issues

The term "debt finance" according to Davydov (2017) is used to describe finance where the borrower receives capital, either for a specific period of time (redeemable debt) or possibly in

perpetuity (irredeemable debt); the borrower acknowledges an obligation to pay interest on the debt for as long as the debt remains outstanding; and the borrower agrees to repay the amount borrowed when the debt matures (reaches the end of the borrowing period). Debt financing might be secured against assets of the borrower. When a debt is secured, the lender has the right to seek repayment of the outstanding debt out of the secured asset or assets, in the event that the borrower fails to make payments of interest and repayment of capital on schedule. The secured assets provide a second source of repayment if the first source fails. When a debt is unsecured, the lender does not have this second source of repayment in an event of default by the borrower.

For both secured and unsecured debt, the borrower is usually required to give certain undertakings or 'covenants' to the lender, including an undertaking to make interest payments in full and on time. The borrower will be in default for any breach of covenant, and the lenders will then have the right to take legal action against the borrower to recover the debt.

Debt financing has both advantages and disadvantages on the growth of corporations and for their strategic investments (Nyamita, 2017). The benefits of debt financing include the tax reliefs on interest payments and the reduction of free cash flow problems. However, it can also be a risky form of finance for a company, as Lenders have a prior right to payment, before the right of shareholders to a dividend. If a company has low profit before interest and a large amount of debt, the profits available for dividends could be very small which could result in agency conflicts between shareholders and debt holders and there is always a risk that the borrower will fail to meet interest payments or the repayment of debt principal on schedule. If a borrower is late with a payment, or misses a payment, there is a default on the loan. A default gives the lender the right to take action against the borrower to recover the loan. Therefore, in making debt financing decisions, managers try to create a balance between the corporate tax advantages of debt financing and the costs of financial distress that arise from bankruptcy risks and agency costs (Ebaid, 2012).

Extensive research has been done, trying to give an explanation on how to create the best level of debt financing that takes into account the advantages and the risks, but none has come up with a conclusive theory so far (Nyamita, 2017). However, financial management literature has accepted some conditional theories of debt financing. One of the first researches about the role of debt financing is that of Modigliani and Miller (1958). They claim that owners of the firms are indifferent about their capital structure, because the value of the firm does not depend on debt-to-equity ratio. They considered "an ideal world" without taxes and any transaction costs. However in 1963, Modigliani and Miller (1963) introduced taxes into their model and show that the value of a firm increases with more debt due to the tax shield. Several theory on corporate finance (Agency Theory, static trade-off, Pecking Order Theory, Market timing theory, Signalling Theory, etc.) now exists which embrace this argument.

2.2 Factors Influencing Debt Financing

The factors that influence debt-financing choice remain indefinite despite much theoretical literature and the reassurance of decades of empirical tests (Micah, 2017). Factors that influence debt financing can be categorised into corporation specific factors or macroeconomic factors or country specific factors. Corporation specific factors are those factors which are distinct and peculiar to each individual corporation, while macroeconomic factors are economic factors of the country which have a common effect to all the corporations within the country (Micah, 2017).

Corporation specific factors have remained the main focus of debt financing from the second proposition of Modigliani and Miller (1963) to the current studies (Majumdar, 2015; Jöeveer,

2016 & Micah, 2017). The corporation specific factors influencing debt financing from the above studies, include corporation profitability, corporation size and growth, nature of assets, non-debt tax shields, liquidity and probability of bankruptcy. Other corporation factors, like corporation tax rates, business risk, access to capital markets, the finance manager's gender and the composition of the board of directors, are also considered to have influence on debt financing (Jõeveer, 2016).

Macroeconomic factors are regional or national economic factors which externally influence the corporation's financial strategies, including debt financing decisions. Financial management literature recognizes the important role that macroeconomic factors play in the determination of capital structure decisions of firms (Micah, 2017)

Gross domestic product (GDP), inflation rate, interest rate, financial institutions' activities and industry median has been identified by various researchers as the common macroeconomic factors which have an influence on the debt-financing decisions of corporations (Jõeveer, 2016; Micah, 2017).

2.3 Types of Debt Financing within Corporations

Generally, the investments of corporations can be financed by either internal or external sources of funds. Internal financing is the use of funds that are generated within a corporation, rather than from external sources, for example, undistributed profits and the tax liability savings that result from depreciation. On the other hand, external financing involves getting funds from an outside source without giving goods or services in return. The major source of external finance is debt financing, compared to equity external funds (Nyamita, 2017).

Classification of sources of debt financing can be varied depending on the characteristics of the provider and the debt's maturity period. It can be categorised into public or arm's-length debt (monitored debt) (Nyamita, 2017). Chen, Cheng and Lo (2016), reviewing the same categories, referred to them as public versus private debt.

Public debt financing is the process of obtaining funds from the securities markets by issuing different types of debt stocks of corporations. The debt stock of corporations is currently referred to as bonds or notes, in general. However, in advanced securities markets, such as in America and Europe, the corporation can raise funds through different kinds of bonds or notes depending on the corporation's needs. The common bonds or notes used in these markets are either domestic or international (foreign). Domestic bonds or notes are those issued by the corporation in their local stock markets, while, international bonds or notes, are those issued in the foreign stock markets. Another kind of a public bond can arise through the issuance of a preferred stock, which has similar characteristics as equity stock, but their holders have no voting rights or ownership rights. The bonds issue has not been very prominent in Nigeria, with very few corporations, including state-owned corporations, using this kind of debt financing (Benmelech and Dvir, 2016). Public debt which matures within one year is referred to as either a commercial paper or a discount note. The American stock markets use the term discount note, while, in Europe, Asia and Africa, the term commercial paper is common. Just like the bonds or the notes, the discount notes or commercial papers can be issued by a corporation either in a domestic or a foreign stock market (Nyamita, 2017).

The monitored debt or private debt is that which is provided by the creditor who often demands access to non-public information about the corporation, closely monitors investment decisions, and more efficiently decides whether to liquidate or refinance the corporation during financial distress (Chen, Cheng and Lo 2016). The private debt is, therefore, made up of bank loans and

amounts payable to suppliers of goods and services. In the developed and developing economies, the other common types of the private debt are the derivative financial instruments. The derivative financial instruments common in America, Europe, Asia and part of Africa, are the swaps, options and forward contracts, which are mostly used by the corporations in foreign exchange risk hedging (Nyamita, 2017).

In the debt maturity term perspective, Benmelech and Dvir (2016) have classified debt-financing sources as either long-term debt or short-term debt. Long-term debt is a type of debt which a corporation has an obligation to pay off within a period longer than the corporation's accounting period. On the other hand, short-term debt refers to debt whose holders expect to be repaid within a short run, normally a period less than the corporation's accounting period. Berglöf and Von Thadden (1994) quoted in Nyamita (2017) argued that the principal reason for the kind of separation is that "if the firm is doing well in the short run, the short-term creditor is repaid, and long-term claim-holders receive all future returns". "If the firm is unable to repay in the short run, the short-term creditor forces the firm to transfer or sell part of its assets". "The maturity of her remaining claims is extended at the expense of some (not necessarily all) junior long-term claim-holders". This type of classification is also adopted by the International Financial Reporting Standards (IFRS), in reporting the outstanding debt in the corporation's statement of financial position (Nyamita, 2017).

There are some other special types of debt arrangements like lease financing, provisions and deferred tax liability. Lease financing, is a contractual agreement in which a lender, identified on the contract as the lesser, grants the individual (corporation) or group of individuals leasing the product/equipment, identified on the contract as the lessee, the ability to operate the equipment for a given amount of time, identified as the term of leasing, while making specific monthly payments to the lesser or leasing company.

Provision is an amount from profits that has been put aside in a corporation's accounts to cover a future liability, for example, employees' retirement benefit. These funds are always available within the corporations and can be used to finance the activities of the corporation before the actual payments are made. Deferred tax liability is an account on a corporation's balance sheet that is a result of temporary differences between the anticipated and enacted income tax amount, and estimated taxes payable for the current year (Nyamita, 2017). This liability may or may not be realized during any given year, which makes the deferred status appropriate and a way of financing the corporation's assets before it is cleared for the accounts.

2.4 Debt Financing and Financial Performance of Companies

Debt-financing strategy should be designed to increase the rate of return on investment of owners by generating a greater return on borrowed funds than the cost of using the funds. This debt-financing strategy is referred to as financial leverage (Nyamita, 2017). The financial leverage increases the potential reward to shareholders (financial performance) and also increases the potential for financial distress and business failure. Therefore, debt-financing strategy will have a positive effect if return on assets (ROA) is greater than the before-tax interest rate paid on debt. A negative effect will occur when a corporation generates a return on assets (ROA) that is less than the before-tax interest on debt. Studies on the relationship between corporations' financing choice and their performance often conclude that debt financing either hurts or boosts performance (Nyamita, 2017).

A study on corporations in the USA and other countries revealed that debt financing potentially increases the value of corporations through the tax deductibility of interest (Nyamita, 2017). The

use of debt, therefore, reduces the amount of tax to be paid by the firm and increases the return to shareholders, whilst the use of equity does not enjoy such a benefit. In addition to the tax advantage, the cost of debt is generally low as compared to equity due to the lower risk associated with debt, as debt holders have the first claim in the case of insolvency (Nyamita, 2017). Debt also makes planning easy because interest cost on debt is usually fixed, which allows efficient planning as the cost will be known. As long as the interest on debt is lower than the return that can be earned on the funds supplied by lenders, this excess return accrues to the owners of the corporation as their benefit for using debt. Though debt has its fair portion of benefits, it does not come without costs. The major costs associated with debt, as discussed, include bankruptcy, agency costs and loss of flexibility.

2.5 Theoretical Framework

In an attempt to provide a sound theoretical background for this study, this study is anchored on the Static Trade-Off and Pecking Order theories

2.5.1 Static Trade-Off Theory

Static trade-off theory argues that for each company there is an optimal capital structure, with an optimal level of gearing. There is a trade-off between the benefits of taking on more debt and the cost of higher indebtedness. The benefits of taking on debt (rather than equity) are mainly in the tax relief that is obtained on debt interest (Berger and Udell 2004; Tudose 2015). Modigliani and Miller have argued that although the cost of equity rises as gearing increases, the tax relief on debt means that the company's weighted average cost of capital falls as gearing rises. It is therefore beneficial to take in more debt and increase gearing up to the point where the marginal costs of extra debt start to exceed the marginal benefits of extra debt. The marginal costs of extra debt are related to the greater risks from 'financial distress.' If lenders perceive that a company with high levels of debt could be in financial distress (and in danger of failing to make payments of interest and repayments of loan capital on schedule), it becomes much more difficult to raise extra debt finance. The cost of debt might therefore increase substantially to compensate a lender for the high credit risk. The optimal gearing level for a company is reached at a point where the marginal benefits of taking on additional debt capital equals the marginal costs of taking on the extra debt (Lemmon and Zender, 2010). Therefore a very profitable company can take on higher gearing because the marginal costs of financial distress will not become significant until the gearing level is very high.

Thus, according to trade-off theory a positive relationship could be expected between debt level and firm's performance. Some previous studies provide empirical evidence supporting this relationship (Nyamita, 2014).

2.5.2 Pecking Order Theory

Pecking order theory takes a different view of gearing and methods of financing new investments. It was put forward by Myers in 1984 as a challenge to the static trade-off theory. This theory states that companies show preferences for the source of finance that they use. There is an order of preference or 'pecking order'. The source of finance that is preferred most is retained earnings; debt capital is the source of finance second in the order of preference while new equity capital (an issue of new shares) is the least preferred source of finance for investment. The theory basically states that the corporation will use debt financing, rather than issuing equity, when internal cash flow is not sufficient to finance investment expenditure (Myers 2001). The reasons for the pecking order of preferences for sources of finance can be explained by practical considerations. Using retained earnings is convenient. If a company wants to finance a new

investment with equity, it is much simpler and cheaper to use retained earnings than to arrange a new share issue. Retained earnings are also much more convenient than new borrowing. Where a company cannot finance an investment with retained earnings, it will prefer new borrowing to a new issue of shares because borrowing is cheaper. It is cheaper to arrange a loan than to issue new shares. The cost of debt is also less because of the tax relief on interest payments.

Pecking order theory states that the gearing of a company is the result of a series of financing decisions based on these preferences for sources of finance. An optimal level of gearing does not exist, and companies do not try to achieve an optimal gearing level (ACCA, 2015).

2.6 Empirical Studies

Ebaid (2009) carried out a study to establish the relationship between debt level and financial performance of companies listed on the Egyptian stock exchange. The study used return on assets, return on equity and gross profit margin as dependent variables and short-term debt, long-term debt and total debt as independent variables. The results from the study showed that there was a negative impact of short-term debt and total debt on return on assets (ROA). The study also concluded that there was no significant relationship between long-term debt-financing and ROA. Ebaid (2009) also concluded that there was insignificant relationship between total debt, short-term debt and long-term debt and financial performance measured by gross profit margin and ROE.

Ong and Teh (2011) investigated on the capital structure and firms performance of construction companies for a period of four years (2005-2008) in Malaysia. Long term debt to capital, debt to asset, debt to equity market value, debt to common equity, long term debt to common equity were used as proxies as the independent variables (capital structure) while returns on capital, return on equity, earnings per share, operating margin, net margin were used to proxy the corporate performance. The result shows that there is relationship between capital structure and corporate performance.

Amin & Gerald (2014) investigated the impact of debt structure on production efficiency and financial performance of Broadacre farms in Western Australia Using a 10 year unbalanced panel of Broadacre farms in Western Australia. The study relates the impact of long-term debt, short-term debt and tax liability on farm performance measured by input-oriented technical efficiency and return on assets. The study found that farm technical efficiency is positively related to short-term debt, tax liability and capital investment, but negatively related to off-farm income generating activities. Long-term debt has no effect on production efficiency and return on assets. These results are robust to both parametric and nonparametric methods of estimation.

Hlupeko (2013) investigated the impact of debt financing on the operations of SMEs in Masvingo, Zimbabwe. Both qualitative and quantitative research designs were used in the study. The study used a sample of 80 SMEs. Primary data was collected by means of a survey. Secondary data from SMEs records was used in the study. The data was analysed using SPSS 19. The results from the study showed that debt finance had a positive impact on productivity of SMEs. The study also established that firms which received adequate funding from banks improved their productivity. Another finding of the study was that the cost of borrowing was too high to enable firms to borrow adequate amount of required finance investment. The study concluded that a reasonable level of debt in the capital structure of the SMEs helped to improve their productivity.

Khalaf (2013) studied the impact of debt financing on performance of manufacturing companies using a sample of 45 manufacturing companies listed on the Amman Stock Exchange were used

for this study which covers a period of five (5) years from 2005-2009. Multiple regression analysis was applied on performance indicators such as Return on Asset

(ROA) and Profit Margin (PM) as well as Short-term debt to Total assets (STDTA), Long term debt to Total assets (LTDTA) and Total debt to Equity (TDE) as capital structure variables. The results show that there is a negative and insignificant relationship between STDTA and LTDTA, and ROA and PM; while TDE is positively related with ROA and negatively related with PM. STDTA is significant using ROA while LTDTA is significant using PM. The study concludes that statistically, debt financing is not a major determinant of firm performance. It recommends that managers of manufacturing companies should exercise caution while choosing the amount of debt to use in their capital structure as it affects their performance negatively.

Ogebe, Ogebe and Alewi, (2013) investigated the impact of capital structure on corporate performance in Nigeria from 2000 to 2010. The study paid particular attention to macroeconomic variables (Gross Domestic Product and inflation) on firm performance. The study concluded that there was a strong relationship between leverage and corporate performance. The study concluded that there was a significant negative relationship between capital structure and corporate performance.

Akinmulegun (2012) examines the effect of financial leverage on selected indicators of corporate performance in Nigeria. The study employed the econometric technique of Vector Auto Regression (VAR) model. The findings revealed that Leverage shocks exert substantially on corporate performance in Nigeria. In addition, Earnings per Share (EPS) depends more on feedback shock and less on leverage shock. Leverage shocks on Earnings per Share indirectly affect the Net Assets per Share of firms as the bulk of the shocks on the Net Assets per Share were received from Earnings per Share of the firms. Leverage therefore significantly affects corporate performance in Nigeria.

2.7 Research Gap

Majority of the studies reviewed is sectorial focused; such as the study of Ong and Teh (2011) which focused on construction companies in Malaysia, Khalaf (2013) focused on manufacturing industries of Nigeria, Hlupeko (2013) concentrated on SMEs in Zimbabwe, Amin & Gerald (2014) focused on agro-based companies in Australia. The findings of the foreign studies are very vital only that the differences in their political and economic situation among the nations may hinder their finding from being applicable to Nigeria and nonetheless, all of the studies reviewed on debt financing in Nigeria has its earliest year as 2011 and most of the studies observed companies with periods of 2000-2011 as their year of assessment. Therefore these study aim to expand the scope of other studies by examining the impact of debt financing on the financial performance of 34 listed companies covering all but the financial sector in Nigeria for a 5 year period from years 2011-2015 to make it more current and relevant in academic discourse.

3. Methodology

This study examined the impact of debt financing on firm's performance in Nigeria. This study used a secondary data; data was collected from the company's annual reports and financial statements. Information relating to companies performance (ROCE and EPS) and Financing decisions variables (long term debt to capital employed ratio and interest) was collected from the sampled company's annual reports and financial statements. The population for this study comprise all 188 companies listed on the Nigerian Stock Exchange (NSE) at 2014. However, the sample size for this study is limited to 34 companies listed on the Nigerian Stock Exchange Market (NSEM). These companies are selected because of the availability of their financial

statements for the periods of 2011- 2015. Furthermore, financial sector was excluded because of the special regulatory environment in which they operate. For the purpose of empirical analysis, the descriptive statistics, Pearson correlation analysis and the panel data regression technique were used in analysing the relationship between debt financing and companies' financial performance. Hausmann specification test was employed to choose between Random and Fixed Effects models.

The model used established a relationship between debt financing and firm performance in Nigeria. Thus, the model is presented as follows:

$$FPERF = f(\text{GEARING}, \text{INTEREST}) \dots\dots\dots 1$$

Equation (i) is re-specified in the form of panel stochastic form model to fit both fixed and random effects models as follows:

$$ROCE_{it} = \alpha + \beta_1 \text{GEARING}_{it} + \beta_2 \text{INTEREST}_{it} + \varepsilon_{it} \dots\dots\dots 2$$

$$EPS_{it} = \alpha + \beta_1 \text{GEARING}_{it} + \beta_2 \text{INTEREST}_{it} + \varepsilon_{it} \dots\dots\dots 3$$

Where:

FPERF= Financial Performance

GEARING_{it}= Gearing ratio of company *i* at time *t*

INTEREST_{it}= Interest cover ratio of company *i* at time *t*

ROCE_{it}= Return on Capital employed of company *i* over time *t*

EPS_{it}= Earnings per share of company *i* over time *t*

$$\varepsilon_{it} = v_i + \mu_t$$

Where:

ε_{it} = Total error term

v_i = Individual effect

μ_t = Time effect

α = Intercept

β = Coefficient to be estimated

i = No of Firms (34 firms)

t = Time period (2011- 2015)

The a priori expectation of the study is that Performance of companies improves as debt financing in the capital structure of the company increases.

4. Result

Table 1: Summary Statistics

Variable	Mean	Maximum	Minimum	Observation
EPS	2.93	28.08	-1.21	170
ROCE	18.31	122.39	-324.06	170
GEARING	27.38	122.62	-62.79	170
INTEREST	32.60	276.62	-11.56	170

Source: Author's Computation, 2018

Table 1 shows the descriptive features of both dependent and independent variables used in the study. It can be seen from the table that the average values of earnings per share (EPS) and return on capital employed (ROCE) recorded by 34 quoted non-financial companies is N2.93 and 18.31% respectively for the periods 2011 to 2015.

During the same periods, the companies obtained an average of 27.38% and 32.60% for gearing ratio (GEARING), and interest coverage ratio (INTEREST) respectively. The minimum and maximum values of all the variables within the five (5) year period are as shown in the table.

Table 2: Pairwise Correlation

	EPS	ROCE	GEARING	INTEREST
EPS	1.0000			
ROCE	0.1681	1.0000		
GEARING	0.2765	-0.2748	1.0000	
INTEREST	-0.0017	0.0480	-0.0841	1.0000

Source: Author's Computation, 2018

In Table 2, different pairs of relationship between the variables are presented. The table reveals that the level of correlations between variables especially the explanatory variables is low. This shows absence of perfect linear relationship between the explanatory variables. It means that there is no multicollinearity.

Table 3: Hausmann Test

Model	Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f	Prob.
One	Cross-section random	57.43	3	0.0000
Two	Cross-section random	13.59	3	0.0035

Source: Author's Computation, 2018

Table 3 shows the results of Hausman test conducted to choose between the estimates of Fixed Effects and Random Effects techniques. Generally, Random Effects estimates would be preferred in case the null hypothesis that the differences in the estimates of the two methods were not significant. Since the p-value in each of the models indicates significant level at 1%, the underlying null hypothesis could not be accepted. Therefore, we are inclined to conclude that estimates of Fixed Effects technique are suitable and are adopted for the study.

Table 4 Regression Results: Impact of debt financing on return on capital employed (ROCE)

ROCE	Coefficient	Std. Error	t-statistics	Prob.
Constant	-132.2244	25.9804	-5.09	0.000
GEARING	-0.8450	0.1767	-4.78	0.000
INTEREST	0.0008	0.0013	0.63	0.529
R-Squared	0.80			
Adj R-Squared	0.67			
F-statistic	31.83			
Prob(F-statistic)	0.0000			

Source: Author's Computation, 2018

Table 4 shows the results of Fixed Effects Model (FEM) estimated to examine the effect of debt financing on return on capital employed (ROCE). According to the results, a significant although negative relationship is found to exist between ROCE and Gearing ratio which means that a 1% increase in gearing ratio will reduce Companies performance (ROCE) by approximately 85% and this is against the a priori theoretical expectation. Interest Coverage Ratio (.00080) as shown in the table is not statistically significant.

The table shows R^2 of approximately 80% which means that 80% variation in the dependent variable are explained by the independent variables while the remaining 20% is captured by the disturbance variable (Error term). The F-statistics of 31.83 explain the overall goodness of fit of

the model and this shows that the model is of good fit, this is shown through the probability of F-statistics (0.0000). Thus, debt financing has significant impact on return on capital employed (ROCE) of companies in Nigeria.

Table 5 Regression Result: Influence of debt financing on earnings per share (EPS)

EPS	Coefficient	Std. Error	t-statistics	Prob.
Constant	7.9222	1.6315	4.86	0.000
GEARING	-0.0172	0.0111	-1.55	0.124
INTEREST	0.0000	0.0001	0.00	0.771
R-Squared	0.91			
Adj R-Squared	0.72			
F-statistic	25.49			
Prob(F-statistic)	0.0000			

Source: Author's Computation, 2018

Table 5 above shows the results of Fixed Effects Model (FEM) estimated to examine the impact of debt financing on earnings per share (EPS). According to the results, gearing ratio and company performance has a negative but insignificant relationship which means that a 1% increase in gearing ratio will reduce Companies performance (EPS) by approximately 2units and this is against the a priori theoretical expectation. Further, the coefficients of interest coverage ratio (INTEREST) are not statistically significant.

The table shows R^2 of approximately 91% which means that 91% variation in the dependent variable are explained by the independent variables while the remaining 9% is captured by the disturbance variable (Error term).

The F-statistics of 25.49 explain the overall goodness of fit of the model and this shows that the model is of good fit, this is shown through the probability of F-statistics (0.0000). Thus, debt financing has significant impact on earnings per share (EPS) of companies in Nigeria.

4.2 Discussion of Findings

The chapter carried out inferential analysis to establish the impact that debt financing has on financial performance of Nigerian companies. The study results reveals that the independent variables of debt financing (gearing ratio and interest cover ratio) explain and can predict financial performance of the Nigerian companies as measured by ROCE and EPS. The study indicates that gearing ratio has a negative but significant relationship with performance as measured by ROCE, it also has a negative impact on Earnings per share (EPS) albeit an insignificant one.

Interest cover ratio, a proxy of debt financing does not have any significant relationship with the financial performance (ROCE & EPS) of listed companies in Nigeria.

The findings show that the level of long term debt financing within Nigeria non-financial companies has a negative influence on their financial performance. This implies that companies in Nigeria with high financial performance use less of debt financing and more of either internally-generated funds or more of equity. It may also imply that more use of debt financing in Nigerian companies reduces financial performance either through high costs of borrowings or failure of managers to either identify viable investment opportunities in which to combine and allocate such funds to or inability to plan, organize, direct and control the resources (debt financing) for the purpose of producing output.

The findings of this study is in line with the work of Akinmulegun (2012), Ogebe, Ogebe, and Alewi (2013), Mwangi, Makau, and Kosimbei (2014) and Nyamita(2014) which supports the notion that debt financing has a statistical significant relationship with financial performance. The findings also meets prior expectation that debt financing impact significantly on the financial performance of Companies in Nigeria. It also showed a strong support for the pecking order theory which suggests that corporations with high financial performance generate more earnings that are used for self-financing, enabling them to go for less debt financing (Lemmon and Zender 2010). This implies that companies in Nigeria with better financial performance have less debt levels, since they use self-generated resources to finance their investments.

5. Conclusion and Recommendation

The study concludes that debt financing as measured by gearing ratio has a significant impact on financial performance as measured by Return on capital employed (ROCE) and Earnings per share (EPS). On the whole, it can be concluded that debt financing has significant impact on the financial performance of listed companies on the Nigerian Stock Exchange (NSE). Therefore, based on the study findings, the following recommendations are made: Government should regulate the financial sector through various monetary and fiscal policies in order to reduce the cost of borrowing so that profitable companies that want to expand or diversify and in need of additional funds can assess affordable loans; Corporate managers should reduce financial leverage in order to enhance performance; Effective financial management should be put in place by managers which would identify viable investment opportunities; plan, control and adequately implement and allocate long term debt finance among the competing opportunities; and Continuous monitoring is essential to ensure that the financial objective (ROCE) of the company is achieved which in turn would lead to an increase in the value of the company (EPS).

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The Impact of Treasury Single Account (TSA) on the Economic Growth: The Case of First Bank Nigeria Plc

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Abstract

This research looked at effect of Federal government Treasury Single Account (TSA) policy on economic growth and development in Nigeria. This policy has succeeded in re-domiciling government account from Commercial Banks to the Central Bank and made the Commercial Banks to be charging their interests on remittances to this account. The study evaluated the following objectives: to know the effect of treasury single account on bank liquidity; to evaluate the effect of treasury single account on bank deposit; to assess the effect of treasury single account on bank interest rate; to know the effect of treasury single account on bank loans. Evidence from analysis suggests that interest rate and treasury single account are positively related. Bank liquidity, bank deposit and bank loans are found to be negatively related with treasury single account. The following are hereby recommended: Banks should imbibe the culture of increasing customer deposits by aggressive marketing; Bank should give loans to businesses that have high expected monetary returns, interest rate of banks should consider the nature of business and ability to pay so that borrowers would not be discouraged, government should implement treasury single account to the letter, so that banks would sit up to their traditional functions.

Keywords: Treasury Single Account, Bank liquidity, Interest rates, Bank Deposit

JEL Classification: M42, O47

1. Introduction

In a competitive service industry such as Nigerian Global System for Mobile (GSM) telecommunication industry, service quality could be used as a strategic tool by any GSM company to have a competitive edge. Alabede, Afrin and Idris (2011) stressed that Organizations operating in the private sector have long realized that customer satisfaction and continue patronage as well as loyalty is secured through high quality service. Asubonteng, McCleary and Swan (1996) buttress that as quality of service rendered to customer increases, satisfaction with the service and intention to reuse the service equally increase, and vice versa.

Treasury Single Account (TSA) is meant to concentrate all monies into one account to be approved by the President or his appointee. It is reasoned that by so doing, cost of governance would reduce. This, however, is dependent on who manages the account as appointed by the

Federal Government. In Nigeria, TSA is not a new government policy because it has been in the country constitution since 1979. What has been the problem is implementation. Last government 2007-2015 did not implement TSA, but gave directives which formed the framework on which the present government has build on since May 2015. TSA is not new in Nigeria, having being there from the military era. In fact, the entire administration of the military is purely based on treasury single account, but emphasis is on the civil rule. From 2007 the issue of treasury single account in Nigeria has been a problem as Government lacks the gut to implement it. TSA is a public accounting system under which all government revenue, receipts, income and all payments done through the account are collected, and usually maintained by the country's Central Bank. The purpose is primarily to ensure accountability of government revenue, enhance transparency and avoid misappropriation of public funds. The maintenance of a TSA notes Abdulsalam (2015), will help to ensure proper cash management by eliminating idle funds usually left with different commercial banks and in a way enhance reconciliation of revenue collection and payment.

With particular reference to Nigeria, the Central Bank has opened a Consolidated Revenue Account to receive all government revenue and effect payments through this account. This is the TSA. All Ministries, Departments and Agencies are expected to remit their revenue collections to this account through the individual commercial banks that act as collection agents. This means that the money deposit banks will continue to maintain revenue collection accounts for MDA's but all monies collected by these banks will have to be remitted to the Consolidated Revenue Accounts with the CBN at the end of each banking day. In other words, notes Adeniyi (2015), MDA's accounts with money deposit banks must be zeroed at the end of every banking day by a complete remittance to the TSA of all revenues collected. The implication notes Adurogboye (2015), is that banks will no longer have access to the float fund provided by the accounts they maintained for the MDA's. Different types of account could be maintained under a TSA arrangement and these may include the TSA main account, subsidiary or sub-accounts, transaction accounts and zero balance account. Other types of accounts notes Adeniyi (2015), that could be operated include imp rest accounts, transit accounts and correspondence accounts. These accounts are maintained for transaction purposes for funds flowing in and out of the TSA.

The motivation of the study is liquidity squeeze which banks and government agencies face in the full implementation of TSA. The Liquidity problems exist in such a situation when every ministry, department and agency of government is expected to rely on approval from the center. Another problem is bank deposit which has greatly decreased owing to the transfer of government lodgments. Bank deposits as is expected would be decreased. Subject to the policy of the bank the traditional banking system of sourcing for depositors would naturally increase. Another problem is hike in interest rate for loans banks give. This action will naturally increase the interest rate for loans banks give out. So, not many business men now go for bank loans due to high rate, and this grossly affects investment. The study shall benefit the Government agencies in their policy formulation as well as management of firms in their market penetration policies, as well as researchers in the recommendation given herein. The aim of this study is to evaluate the effect of Federal Government TSA Policy on Economic Growth and Development of Nigeria between 1980 and 2016.

2. Literature Review

2.1 Conceptual Framework

In accordance with Executive Order No. 55 (2011), the Bureau of Treasury (BTr) shall operate a TSA to receive remittance of collections of internal revenue taxes/customs duties from Bureau of Internal Revenue (BIR)/Bureau of Customs (BOC) authorized agent banks as well as other national collections of National Government Agencies from authorized government depository banks (Rosallia 2013). The TSA, notes Idris (2015), which shall be maintained at the Bangko Sentral ng Pilipinas (BSP), will align the government policy of greater financial management and control of its cash resources and allow the unification of the structure of government bank accounts to enable consolidation and optimum utilization of government cash resources.

As part of the initiative to implement the TSA, the TSA Reporting and Monitoring System or TRAMS was developed for the purpose of providing BTr with a consolidated view of its cash position through the acceptance of report from the authorized agent banks (AABs) and authorized government depository banks (AGDBs) via a secure file transfer protocol (FTP) site. Moreover, TRAMS notes Balogun (2015), will equip the Bureau of a valuable tool for a simplified and efficient electronic monitoring of collections and generate desired reports that are necessary for informed decision-making. The BTr, together with the BIR and BOC, executed an amendment/supplement agreement with AABs and AGDBs as part of the TSA framework implementation.

2.1.1 Objective

According to Balogun (2015), the objectives of TSA include: to provide greater transparency in the Public Financial Management (PFM), to gain greater clarity to national financing needs and the management of the public debt; to increase fiscal savings (less transaction charges, more revenues); to improve financial markets; to provide more accurate accounting and improved reporting. The TSA is part of government policy aimed at creating a single account for e-collection of government revenues to ensure that the state of all the accounts is known at a glance. Idris (2015), said the introduction of the TSA was part of reforms by the present administration to institutionalize a more effective and transparent management of public finances in the country. "The September 15, 2015 deadline for the closure of all accounts of Federal Government MDAs with the commercial banks is realistic, achievable and will not be shifted forward," (Idris, 2015). Idris said the statement was to correct speculations making rounds in sections of the media that the deadline may not be feasible.

A TSA is a unified structure of government bank accounts enabling consolidation and optimal utilization of government cash resources. It is a bank account or a set of linked bank accounts through which the government transacts all its receipts and payments and gets a consolidated view of its cash position at any given time. A TSA therefore, says Bello (2015), is considered a prerequisite for modern cash management and is an effective tool for the ministry of finance/treasury to establish oversight and centralized control over government's cash resources. The TSA provides a number of other benefits and thereby enhances the overall effectiveness of a public financial management (PFM) system. The establishment of a TSA should, therefore, receive priority in any PFM reform agenda.

Judging by the provisions of the Financial Regulations (FR) and the 1999 Constitution of the Federal Republic of Nigeria, some Ministries/Extra-Ministerial Offices, Agencies and other arms of Government collect revenue such as Value Added Tax (VAT), Withholding Tax (WHT), fees, fines and interest) are expected to remit same into the Consolidated Revenue Fund (CRF).

According to Section 16 of the Finance (Control and Management) Act, LF1990 and the Financial Regulation NO. 413 (i), all unexpended recurrent votes for a financial year shall lapse at the expiration of the year. Consequently, all unspent balances in the Recurrent Expenditure Cash Books at the end of 2012 financial year must be paid back to the Consolidated Revenue Fund Account NO. 0020054141107 with CBN by issuing mandate in favour of "Sub-Treasure of the Federation", Federal Sub-Treasury, Ladoko Akintola Boulevard, Garki II, and Abuja latest by the close of work on the last Friday of every December. It should be noted that all MDAs, including universities, polytechnics, federal medical centers, teaching hospitals, research institutes and River Basin Development Authorities and FPO's were ordered to adhere strictly to this law.

All Accounting Officers are required to make a return of unspent balances on the recurrent expenditure cash books, along with copies of treasury receipts, to reach the Office of the Accountant-General of the Federation latest by close of business on Monday, 31st December, 2012. It is obligatory to comply with this regulation in order to avoid the imposition of stiff penalties against defaulters. The irony, however, is that some parastatals did not remit their operating surpluses into the CRF as provided by the FRA 2007 (S. 22 and 23) while most MDAs engaged in acts that result into loss of government revenue. The remittance should be done through banks.

2.1.2 Benefits of TSA

From the foregoing, says Ocheni (2015), it is obvious that the primary benefit of a TSA is the mechanism it provides for proper monitoring of government receipts and expenditure. In the case of Nigerian, it will help to block most if not all the leakages that have been the bane of the growth of the economy. There is a situation where some MDA's manage their finances like independent empire and remit limited revenue to government treasuries. Under a properly run TSA, states Agu (2015), this is not possible as agencies of government are meant to spend in line with duly approved budget provisions. The maintenance of a single account for government will enable the Ministry of Finance monitor fund flow as no agency of government is allowed to maintain any operational bank account outside the oversight of the ministry of finance.

2.2 Theoretical Framework

Incremental theory of public policy making is premised on the way and manner policy makers think when there is a need for them to take decision affecting generality. These decisions are taken in a condition not too conducive for more deliberation and testing of such proposed policy. Vahyala, Pwafeyeno, and Minnessi (2016) opined that in public policy making and analysis, Incremental theory is a collective effort of various scholars who are referred to as the incremental thinkers such as Herbert Simon (2002), Dlakwa (2014), Braybrook (1963), Dahl (1967), and Lindblom (1968) also contributed to this assertion. Dlakwa (2014) postulated that due to lack of time, scarce resources, intellectual ability and cost implication, policy makers are likely to face problem in generating every Person's view on every given matter. Oyedokun (2016) also suggested that, policy makers using Incremental theory do not review societal values, problems on all policy alternatives and their resultant consequences. They also do not seek to create optimal policy because of lack of time, data, human and material resources. Instrumentalism trusts upon a relatively stable policy contextual, rather than situations, where significant new data and problem identification are required (Howlett and Ramesh, 2003) Vahyala, Pwafeyeno, and Minnessi (2016) also view the directive to adopt TSA in Nigeria as a policy suffering from the incremental model of urgency, though it was partially built on the prevailing experimental policy by former administration of Goodluck Ebele Jonathan and translates it into a full-fledged policy without any in-depth study or background checks. This may not also be traced to the opinion of

Dlakwa (2014) where he indicates that due to constraint in time, limited intellectual ability and cost implication decision makers are unable to sample people's view on every given issue, nor are they in a position to identify all alternative ways of resolving problems before they could choose the best alternative. In line with this philosophy, five distinct characteristics of Incremental theory were proposed by Vahyala, Pwafeyeno, and Minnessi, 2016.

First, it is incremental in the sense that only small steps are taken at a time in order to achieve specific objectives. Second, it is non-comprehensive because of the limitation imposed on policymakers by lack of resources to go into sufficient detail of problems before taking remedial actions". Third, policy decision involves "successive comparisons because policy is never made once. Fourth in practice, decision making "suffices rather than maximizes from among the available options. This means that the policy makers can only solve a tiny bit of the problem and there could be a lot of errors committed by it in making such policy choice. The Fifth is plurality in choice. This is Based on the fact that government decision making rest on a pluralist conception of the public sector in which many contending interest groups compete for influence on our police issues, continually forcing the administrator, as a person in the middle, to secure agreement from among the competing parties (Donald F. Kettl 2015).

The following four (4) assumptions can be inferred from the above submission in relation to newly introduced TSA policy in Nigeria vis a-vis incremental theory as asserted by Vahyala, Pwafeyeno and Minnessi (2016).

Human beings and their values are fragile, volatile and unpredictable in nature. Therefore, the policy maker who wastes too much time in trying to understand all values surrounding a problem before taking a remedial measure would only end up in becoming more confused by the time he completes his in-depth analysis. Policy makers lack the sufficient knowledge required to study and understand all the fact surrounding every issues they come across. Moreover, the available resources of the policymakers are always insufficient which have effect on the analysis. The dynamism of the environment in which the policy maker operates is in continuous flux. It promotes short-sighted decision making that may have adverse long term consequences. Scott (2010) in Eme et al. (2015) uses incremental policy making to explain the unfortunate decision made in Vietnam, Afghanistan and Iraq

Presently, the TSA's directive includes all government agencies including partially funded establishments like teaching hospitals and medical centres. No doubt, so many school of thoughts have been expressing their believes with respect to the fears that the TSA's effect may be unfavorable to some agencies of government such as commercial banks, the Nigerian National Petroleum Corporation (NNPC) and the Nigerian Ports Authority (NPA) if special rules or conditions are not drafted to take their numerous operations and cash obligations into account. There exist assurance that both the Executive and Legislative arms of Government will have to live up to their responsibilities by presenting and approving the budget in a timely manner as late presentation and approval of budget in Nigeria has become a recurrent theme. There is no action without it benefit and it challenges. This TSA is not an exception. System Specs (2016) reported it has successfully integrated 900 MDAs who now use Remita to pay and receive payment from all over the country. This was a major milestone, however, grief of some agencies of government who can no longer operate on a "quick fix" have top the list of those calling the exclusion of their agencies from the incremental modeled(TSA).The faiths of banks also top the performance index table. Though in the word of Udo (2016) Deposit Money Banks (DMBs) were permitted to maintain revenue collection accounts for MDAs, but all collections must be settled to the

Consolidated Reserved Account (CRA) at the end of every banking day; that is MDAs' accounts with DMBs must be at zero balance at the end of every banking day. This study adopted this theory as modified by Udo (2016) to suit our research. The TSA of Nigeria aimed at increasing the revenue generation of Nigeria that is why the incremental theory is most suitable theory to anchor this study. On the other hand, Chukwu (2015) did not discover how treasury single account would improve bank liquidity. Therefore this study evaluates how the implementation of treasury single treasury account (TSA) would improve bank liquidity in Nigerian economy. Secondary data was utilized and no questionnaire used in this work. This work utilized Oyedokun (2016) model to enable it straightens the bank liquidity in Nigeria.

3. Methodology

3.1 Data

Data for the study is collected from First Banks and CBN and Federal Ministry of Finance showing Gross Domestic Product, Bank Liquidity, Bank Deposit, Bank Interest Rate as well as Bank Loans for years (1980-2016). The study use Ex-post facto design which includes both historical and current data as derived from first bank studies to regress on the effects of treasury single accounts on bank liquidity, bank deposit, and interest rate and bank loans. The data is purely from secondary domestic product from first bank. One multiple regression table is done, data from First Bank showing gross domestic product, Bank liquidity, Bank deposit, Bank interest rate, Bank loans from 1980-2016. The study is anchored on the theory, the incremental theory of public policy as model for this research multiple model of four independent variables x_1, x_2, x_3, x_4 related to the dependent value Y. This model was utilized by Udo (2016) with modifications.

3.2 Model Specification

The model for this research is a multiple model of four independent variables x_1, x_2, x_3, x_4 related to the dependent value Y as utilized by Udo, (2016) and applied in this study with modification to justify the values of dependent and independent variables of the work such that,

$$EGD_t = \beta_0 + \beta_1 LD_t + \beta_2 BD_t + \beta_3 IR_t + \beta_4 BLS_t + \mu_t \dots\dots\dots 1$$

Where EGD_t is Economic Growth and Development at time t, LD_t is the Liquidity at time t, BD_t refers to Bank Deposit at time t, IR_t indicates Interest Rate/Treasury Bill Rate at time t, BLS_t entails Bank Loans at time t, β_s are the regression coefficients with μ_t as random error associated with the model.

4. Results

4.1 Data Presentation and Analysis

First Bank Nigeria Plc is selected for the regression because it is the oldest bank in Nigeria which can guarantee all the variables for the study and where most ministries, MDAS, Government agencies, parastatals, institutions, and Medical centers carry out their remittance to CBN. The Stata 14 version software package is used to determine the results. The result from table 4.1 shows the descriptive statistics of Economic Growth and Development, Bank Liquidity, Bank Deposit, Interest Rate/Treasury Bill Rate and Bank Loans for 37 years in Nigeria. From the table 4.2 we observed that the mean, standard deviation, minimum and maximum of the variables under study are shown. The result from the figure 1 below shows the trend analysis of the Economic Growth and Development in Nigeria over the period studied.

Table 4.1 Economic growth, Bank liquidity, Bank loans, Bank deposit, and Interest rate.

Year	EGD	LD	BD	IR	BLS
1980	797,86	30,220	264,988	100,135	114,673
1981	804,15	49,444	390,846	108,316	175,657
1982	847,54	60,881	581,827	159,852	219,185
1983	381,59	88,302	661,624	115,480	437,768
1984	911,96	140,353	1,071,836	17,697	684,107
1985	949,01	74,894	1,330,771	23,599	1,017,411
1986	995,68	199,091	1,783,77	186,626	1,128,851
1987	1013,55	191,509	21,537	53,083	1,562,695
1988	1052,18	341,011	23,314	71,681	1,797,935
1989	1097,97	501,211,425	26,113,011	83,624	1,992,846
1990	1099,98	508,010, 112	26,432,01	83,712	1, 997,076
1991	1097,87	511,147,211	25,657,09	83,231	1,792,156
1992	2012,77	512,122,100	24,762,97	83,211	1,532,123
1993	2,001,44	532,234,122	25,544,75	83,322	1,621,314
1994	1,099,54	433,567,76	25,877,45	84,761	2,002,432
1995	1,099,44	511,678,66	25,890,27	86,432	2,007,231
1996	2,053,553	508,777,84	26,897,77	85,412	2,213,077
1997	1,975,855	608,877,89	27,677,76	87,345	1,990,087
1998	2,543,971	599,832,111	26,876,56	88,234	1, 976,043
1999	1,000,432	916,712,123	27,977,44	98,111	2,342,865
2000	1,097,332	999,321,007	26,145,76	95,912	2,001,456
2001	1,234,732	908,112,076	23,145,87	56,098	1,298,997
2002	2,234,112	988,233,111	22,674,123	55,764	1, 999,509
2003	1,007,348	897,333,256	23,008,342	56,786	2, 001,435
2004	1,231,344	875,871,122	22,564,007	57,231	2,733,005
2005	1,558,544	777,980,456	22,321,900	56,532	1,999,899
2006	1,439,980	765,897,112	23,009,111	57,112	1,678,112
2007	2,112,008	765,877,768	23,876,008	56,721	1,432,334
2008	2,122,009	778,765,907	22,564,009	54,779	2,011,532
2009	2,223,908	876,987,000	23,901,321	55,112	2,008,543
2010	2,000,999	987,246,109	24,554,098	63,900	2,309,005
2011	3,001,009	1,000,100	30,326,099	65,099	3,009,123
2012	3,122,453	1,009,233	32,099,123	66,876	3,909,432
2013	3,443,112	2,433,114	33,124,543	67,124	3,532,123
2014	4,223,776	3,077,332	43,231,888	53,877	3,900,433
2015	5,223,988	5,988,988	44,112,990	67,334	6,008,122
2016	8,231,090	6,877,099	50,675,009	70,766	7,111,444

Source: National Bureau of Statistics, First Bank Corporate Office Lagos 2017.

Table 4.2: Summary of Mean, Standard deviation, Minimum and Maximum of the variables under study

Variable	Obs	Mean	Std. Dev.	Min	Max
Economic	37	1324045	1799731	1.234732	8231090
Liquidity	37	3.42e+08	4.03e+08	508.0101	9.99e+08
Bank deposit	37	1.21e+07	1.53e+07	21537	5.07e+07
Interest	37	74533.49	33759.34	83.231	186626
Bank loan	37	2060874	1438398	1298.997	7111444

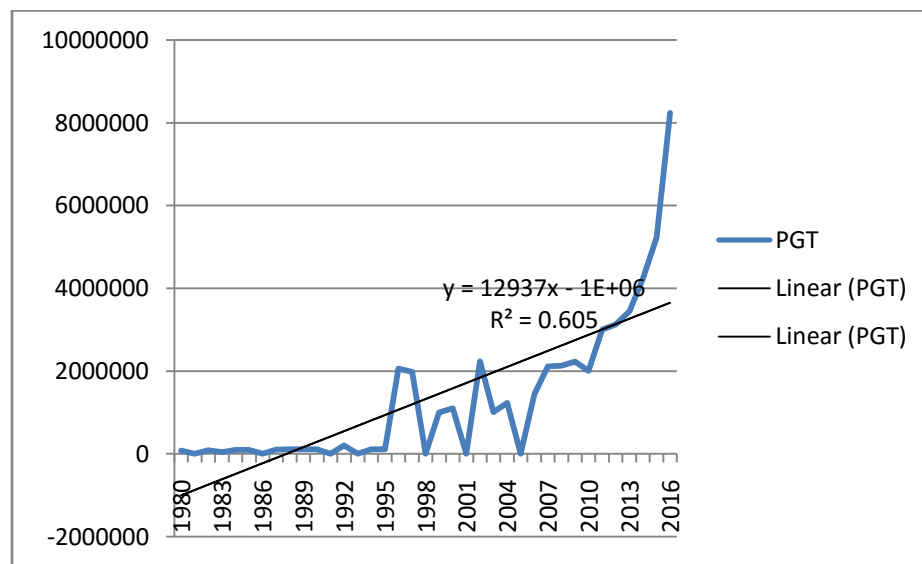


Fig 1 Trend analysis of the Economic Growth and Development in Nigeria

The result from figure1 shows trend analysis of the economic growth and development in Nigeria. From the result, it is shown that Economic Growth and Development in Nigeria have an upward trend for the period of time studied. We observed from the figure, that Economic Growth and Development in Nigeria is at its peak in 2016.

Table 4.3 Regression Analyses showing influence of Bank liquidity, Bank deposit, Interest rate/Treasury bill rate and Bank loan on economic growth and development

Source	SS	df	MS	F(4,32)	Prob>F	R-Square
Model	9.77E+13	4	2.44E+13	41.27	0.0000	0.8376
Residual	1.89E+13	32	5.92E+11			
Total	1.17E+14	36	3.24E+15			

Table 4.4 Model Specification

Economic growth	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]
Liquidity	-.0000636	.0003301	-0.19	0.848	-.000736 .0006088
Bank deposit	.0442918	.0130469	3.39	0.002	.017716 .0708675
Interest rate	2.058895	4.048435	0.51	0.615	-6.187497 10.30529
Bank loans	.7534929	.1381182	5.46	0.000	.4721553 1.034831
_cons	-898450.8	451972.6	-1.99	0.055	-1819089 22187.22

From table 4.3, coef. infers coefficients of the parameters in the model $\beta_0 - \beta_4$ and cons is the parameter of β_0 . The result from table 4.3 shows the influence of the predictor variables (independent variables); Bank liquidity, bank deposit, interest rate/treasury bill rate and bank loan on the Dependent variable (Y) economic growth and development. From the table p-value (Prob>F) = 0.0000 infers significance. From the model specification table, we observe that the p-value for both Bank deposit and Bank loan are less than 0.05 it implies that Bank deposit and Bank loan has a significant influence on economic growth and development in Nigeria. While the remaining variables, liquidity, interest rate/treasury bill rate have no significant influence on economic growth and development. From the table Coef = -0.0000636 infers that for every unit decrease on Bank liquidity have no significant influence on economic growth and development. And for Coef = 0.0442918 infers that for every unit increase on Bank deposit have a significant influence on economic growth and development. Coef = 2.058895 of Interest rate infers that for every unit increase on Interest rate have no significant influence on economic growth and development. Coef = 0.7534929 for Bank loan infers that, for every unit increase on Bank loan there is a significant influence on economic growth and development at about 75%.

Table 4.4: Correlation Analysis showing strength of relationship between the individual variables studied (obs=37)

Variables	Economic growth	Liquidity	Bank deposit	Interest rate	Bank loans
Economic growth	1				
Liquidity	-0.1089	1			
Bank deposit	0.8262	-0.0584	1		
Interest rate	-0.1758	-0.2201	-0.2507	1	
Bank loans	0.8826	-0.1065	0.7608	-0.2044	1

From table 4.4, we observed that $r = -0.1089$ infers a weak negative correlation between Bank liquidity and Economic growth. And $r = 0.8262$ infers a strong positive correlation between Bank deposit and Economic growth. $R = -0.1758$ infers a weak negative correlation between Interest rate and Economic growth. For $r = 0.8826$ infers a strong positive correlation between Bank loan and Economic growth. For $r = -0.0584$ infers a weak negative correlation between Bank deposit and Bank liquidity. For $r = -0.2201$ infers a weak negative correlation between Interest rate and Bank liquidity. For $r = -0.1065$ infers a weak negative correlation between Bank loan rate and Bank liquidity. $R = -0.2507$ infers a weak negative correlation between Interest rate and Bank deposit. For $r = 0.7608$ shows that there is a strong positive correlation between Bank deposit and Bank loan. And finally $r = -0.2044$ infers a weak negative correlation between Interest rate and Bank loan

5.0 Conclusion and Recommendations

The study found that there is negative relationship between treasury single account and Bank liquidity; there is negative relationship between treasury single account and bank deposit; there is positive relationship between treasury single account and bank interest rate, but there is negative relationship between treasury single account and bank loans. This is an agreement of the observation that Abdulsalam (2015) made, which was presented in the literature review that treasury single account makes the bank look inwards to their policies for self sustenance by going out to source for deposits from customer as it is done globally. Taking government money from banks would mean that bank interest rate naturally shoots up.

The result from the figure 1 and table 4.2 above shows the trend analysis of the Economic Growth and Development in Nigeria over the period studied which is in line with Adeniyi (2015), is supposed to be continuity and if we are to learn from the advanced countries, in the United States, there was a year that they threatened to shut down government over spending limits with multiple account of agencies and decided to operate single account. Economic Growth and Development in Nigeria have an upward trend for the period studied which was highly contributed by bank deposit and bank loans which implies significant relationship between economic growth and development with bank deposit and bank loans, while the remaining variables, liquidity, interest rate/treasury bill rate have no significant influence on economic growth and development as shown in table 4.2 above. Therefore, Government should not delay in implementing treasury single account policy in Nigeria. Coefficients of the variables shows no significant relationship to economic growth and development in Nigeria. For $r = 0.8826$ infers a strong positive correlation between Bank loan and Economic growth. For $r = -0.0584$ infers a weak negative correlation between Bank deposit and Bank liquidity. For $r = -0.2201$ infers a weak negative correlation between Interest rate and Bank liquidity. For $r = -0.1065$ infers a weak negative correlation between Bank loan rate and Bank liquidity. $R = -0.2507$ infers a weak negative correlation between Interest rate and Bank deposit. For $r = 0.7608$ shows that there is a strong positive correlation between Bank deposit and Bank loan. And finally $r = -0.2044$ infers a weak negative correlation between Interest rate and Bank loan as shown in table 4.3 above. Nigerians should support the implementation of TSA.

This study therefore, recommended that banks should imbibe the culture of increasing customer deposits by aggressive marketing. Bank should give loans to businesses that have high expectation of monetary returns. Interest rate of banks should consider the nature of business and ability to pay so that borrowers would not be discouraged, and government should implement treasury single account to the letter so that banks would sit up to their traditional functions.

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Analysis of Attitude and Subjective Norm of Customers to Adopt Non Interest Banking in Nigeria: A Preliminary Study

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Abstract

The main objective of this paper is to investigate whether the items of attitude toward adoption of Islamic banking and items of subjective norm are reliable and valid to predict the intention to adopt Islamic banking in Northern Nigeria. It is significant to know that attitude of customers to adopt Islamic banking and subjective norm are new in Islamic environment. Therefore, to test the capability of these variables is imperative in Islamic economics, Islamic banking, accounting, taxation and insurance. The paper found that attitude of customer towards the adoption of Islamic banking and subjective norm items are capable of predicting intention to adopt Islamic banking in northern Nigeria. The study used Cronbach alpha and found that the variables are reliable and valid. The paper establishes that items used in this preliminary study can efficiently be used in the main study.

Keywords: Attitude, Customers, Islamic Banking, Nigeria

JEL Classification: G24, Z12

1. Introduction

Islamic banking (IB) can be defined as a method of banking that is consistent with the ideologies of Islamic rule (shariah) and its practical presentation over the development of Islamic economy (Lawal, 2010). In addition, the structures of Islamic banking comprises the revulsion of interest rate, prohibition of drinking of alcohol, pornography, and all financial activities that are publicly or morally harmful to the society and any items believed to be forbidden by shariah. In the same vain, Islamic bank operate on profit and loss sharing among the provider (investor) of the fund and user (entrepreneur) (Lawal, 2010). Furthermore, Islamic banking has become an essential part of the international financial system (Dogarawa, 2013). In the early 1990s, it added international recognition as a viable and competitive system of financial intermediation not only in Muslim countries but also in the secular world, contribution a wide variety of financial products and services. Interest free banking continued to provide for the need of not only the Muslim community but also non-Muslims who want to avoid interest (Dogarawa, 2013). Over seventy countries in the world are into Islamic banking practise as a result of growth in profit they experience over the years. The countries includes Singapore, South Africa, United States, Malaysia, Kenya Canada, China, United Kingdom and Nigeria (Gumel, 2013).

Islamic banking (*Ja'iz*) in Nigeria was formally introduced on Friday 6th January 2012 (Dogarawa, 2013) in order to widen the scope of the financial intermediation and financial

inclusion offered by conventional banking institutions. Unfortunately, the bank received mixed reactions, religious misconceptions and stiff resistance (Aliyu, 2012). According to Gelbard, Hussain, Maino, Mu, and Yehoue (2014), even though Nigeria has the largest potential customers of Islamic banking in Sub-Saharan Africa with nearly 85 million Muslims, but Islamic banking still remains underdeveloped in the country. In the beginning, it was reported that the bank was growing at a slow phase which was affecting its adoption among Nigerian customers and therefore its survival (Abdullahi, 2012). In addition, in its end of the year annual report, *Jaiz* bank in Nigeria announced an operating loss of N1.07billion in 2012 (BusinessNews, 2013; new24nigeria, 2013), while conventional rivalries declared huge sum of profit (Bangudu, 2013). In fact, *Jaiz* Managing Director recently pleaded for the support of more customers in an effort to cope favourably with conventional rivals (Gumel, 2015).

2. Literature Review

2.1 Intention to Adopt Islamic Banking

In contemporary study intention to adopt Islamic Bank (IDIB) is a dependent variable which is used to measure degree. People had interest to adopt IB services and to see IDIB in relation with the factors contributing towards its adoption. According to Ajzen,(1991) stated that intention have been defined in the theory of reasoned action and theory of planned behavior as, the extent of effort one is willing to employ to accomplish a good “behavioral plans that enable attainment of a behavioral goal”(Ajzen,1996) or “proximal goals” (Badura, 1997).In principle, intention can be perceived of a decent states in the expectancy value belief that are the result of a careful process that takes time, requires some planning, and focus on result (Loewenstem,et al,2001). However, intention is a motivational variable that measures the degree to which an individual makes an effort to carry-out the expected behavior (Fishbein et al., 1991). Similarly, Ajzen (1991) state that intention also predicts the likelihood of persons engaging in an anticipated behavior. Numerous social psychological models, including Triandis’s (1980) attitude-behavior theory, and protection motivation theory (Rogers, 1983), the theory of reasoned action (Fishbein, 1980 Fishbein & Ajzen, 1975) the theory of planned behavior (Ajzen, 1991), argue and propose that intention is the immediate determining factor of real performance of any behavior of interest because human behaviour is determined by persons intention to the target behavior (Conner,& Norman.2001;Sheeran,2002). Hence, in the exertion to understand and predict public’s behavior it rests vital to examine factors related with intention (Levin, 1999).

2.2 Attitude and Intention to Adopt Islamic banking

Again, Sparks and Shepherd (1992) also stated that attitude is the sum of personality’s belief roughly on behavioral outcome and their evaluations of those outcomes. .On the other hand, according to them attitude is focused on a particular entity or object, rather than all objectives and situations with which is related. More importantly, an attitude is a predisposition to like or dislike things or degree of favourable or unfavourableness to a psychological object. In the same way, attitude can be defined as individuals behaviour near positive or negative moods about carrying out a target behaviour (Fishbein and Ajzen,1975;2001;2010).Additionally, attitude can be describe as a complex and multidimensional concept that consists three component, and this component are Cognitive, Affective, and Conative Mark loo (2010). However, cognitive factor is that part of attitude which bases is on awareness and skill, the following part of attitude is affective which is based on likeness or dislikeness of particular object or product. Meanwhile, the third part of attitude is conative which is based on purchase and consumption. But, this study intends to use definition of (Ajzen & Fishbein, 2010).

2.3 Subjective Norm and Intention to Adopt Islamic banking

Subjective norm can be defined as “individual’s perception of general social pressure to perform or not to carry out the behavior”. Equally, in the theory of reasoned action and the theory of planned behavior (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980; Ajzen, 1991) asserts that subjective norm is a specific behavior, decree attributed to a generalized social agent. Also, Armitage and Conner, (2001) argued that individuals copy the behavior of others that impress them and reject the behavior of others that did not impress them. Therefore, it is important to know that normative pressure is divided into two; injunctive norm and descriptive norms, both can influence behavior Fishbein et al. (2010). Injunctive norms refers to perception concerning what should or ought to be done with respect to carrying out a given behavior and descriptive norms refers to perception that others are or are not performing the behavior in question “DO as I say, not as I do” (Fishbein et al., 2010).

3. Methodology

The research is a quantitative study and questionnaires were personally administered by the researcher and a total 80 questionnaires were distributed to the customers of Islamic banking in Nigeria. However, several items were adapted from previous works on intention studies (Amin, 2011; Amin, 2014). responses to the survey question on the variables were entered on a five-point Likert-scale Thus, our preliminary study was conducted in May 2019, where all 80 questionnaires were sent out for the preliminary survey; however, only 51 customers from Islamic banking in Kaduna, the north-west zone of Nigeria completed the questionnaires to ascertain the reliability of the items adopted from prior studies. It is very significant because scale items accepted were developed mainly in Malaysia (Amin *et al.*, 2011). This gives a response rate of 68% and the whole process was finalized within three weeks in the month of May, 2019.

3.1 Validity of Instrument Measure

Validity mentions extend to which evaluating tools measured accurately, the items under consideration. Sheeran (2004) Ascertain two ways in validity measurement; constructs validity and face validity. Therefore, the study distributed fifteen questionnaires to knowledgeable in the field of Islamic banking, Islamic scholars, and academicians for their input. Subsequently, after collecting all the submissions and recommendations some of the items were removed some were changed some were added. In addition, face validity allow expert to assess and judge the appropriateness of items under concern (Hair et al (2007).

Finally, the study ascertained construct validity with the procedure of factor analysis by means of principal component analysis. Cavana et al (2001) states that factor analysis is imperative for items reduced to significant size. The outcome of validity analysis demonstrated that all the three variables KMO are within acceptable range use of (0.674 to 0.749). According to Hair et al (2010) suggested a minimum of 0.50 as acceptable value.

Table 1 below shows the validity.

Variable	Items before	Items after deletion	KMO
Attitude	5	5	0.674
Subjective norm	5	4	0.749
Behavioral intention	6	5	0.748

3.2 Reliability

Sekaran and Bourgie (2010) states that reliability instrument are the measuring scale which are engaged in order to know whether items are free from inaccuracy, steady and consistent over time. Cronbach alpha measurement is the most widely used in evaluating reliability of the items. Hair et al (2010) suggested 0.60 as minimum Cronbach alpha acceptable value. In line with this the present study's Cronbach alpha for all the three constructs ranges from 0.712 to 0.826. We can determine that all the variables are reliable..

Table 2 below shows the construct reliability.

Variables	No of items	Cronbach's Alpha
Attitude	5	0.712
Subjective norms	4	0.826
Behavioral intention to adopt Islamic	6	0.752

4. Result

This study was conducted to evaluate the reliability and validity of three constructs namely: intention to adopt Islamic banking, attitude of customer and subjective norm. The current study uses Cronbach alpha for reliability evaluation and factor analysis for validity estimation. Therefore, Cronbach alpha grounded on five items of behavior intention to adopt Islamic banking was 0.752, KMO 0.748 and the Cronbach alpha of attitude toward adoption of Islamic banking founded on five items was 0.712, KMO 0.674 while subjective norm Cronbach alpha is 0.826, KMO 0.749. Finally, all the three variables KMO are within acceptable range use of (0.674 to 0.749). According to Hair et al (2010) suggested a minimum of 0.50 as acceptable value.

5. Conclusion and Recommendation

This conceptual paper provides a theoretical discussion of factors that influence customer's intention to adopt Islamic banking. Finding from the instruments or items measurement shows it is authentic, which can be of significance to academic researchers and managers for effective market strategies, thereby promoting Islamic banking adoption. Researchers can concentrate more on this area to provide more robust findings in the area.

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Extreme Capitalism in Thomas Hardy's *Mayor of Casterbridge*

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Abstract

Thomas Hardy's novel The Mayor of Casterbridge (1886) presents the author as a humanist and the protagonist, Michael Henchard, as a human being who follows his desire. My claim is that Henchard fails as a capitalist and as a father because he perceives the personal and the social aspects of individual development to be split rather than in a symbiotic relationship. He does not understand that being a husband and father implicitly and inextricably binds the private sphere with the social network. Henchard becomes an agent of disorder as a result of three key interconnected choices of actions rooted in an overpowering desire: he auctions his family, drinks, and lies. While following his desire, Henchard favors the social aspect of his development at the cost of the personal one, fractures his development, and perturbs the sanctioned Victorian order. He fails because desire, in the Lacanian schema, is of desire and is never fulfilled. First, Henchard rejects fatherhood, choosing to rise up the social ladder through acquisition of wealth and respectability. Developmentally, he is at the end of what Jacques Lacan terms the mirror stage, identifying with the figure of the capitalist, his Ideal-I, entering the symbolic order of language and desire. Lacking compassion and the sacrificial spirit of a father, he auctions his family, whom he perceives as an impediment. Later, the esteemed middle-class man with financial acumen and work ethics reconfigures his desire, taking on the paternal role, but becomes socially alienated.

Keywords: Humanity, Humanism, Desire, Individual Development, Social Development, Disorder, Choice

JEL Classification: B31, G32, Z11

1. Introduction

Character is Fate" (Hardy, 2008), says the narrator in Thomas Hardy's *The Mayor of Casterbridge* (1886), quoting Novalis. Through the words of the German Romantic writer, Hardy reveals his humanism, intimating that it is through the choices an individual makes rather than because of an external force that the individual determines his trajectory in a certain direction in life. While unpacking Novalis's claim, the novel depicts fate as an inner rather than an outer force and simultaneously reveals the narrator as a humanist and the protagonist as a human being animated by desires that, as we shall see, conflict, to a certain extent, with societal dictates. Thus, the novel represents an occasion not only for exegesis but also for a critical examination of the concept of the self, stimulating self-interpretation and self-evaluation. By citing Novalis's simple claim, the narrator deems the individual, and particularly the protagonist, Michael Henchard,

responsible for his own failure as capitalist and father as well as for his exit from the society whose order he has disrupted. Here Hardy joins the seventeenth-century philosopher Baruch Spinoza, who had advanced the idea that we can understand an individual within a total structure. In *Ethics, Demonstrated in Geometrical Order* (1677), Spinoza had thought this total structure to be one substance, God, whose existence he found necessary, and to have universal laws, to which man is subject (ID6, Spinoza 1). Yet, as a humanist, Hardy diverges from Spinoza, supplanting the one substance with the social network of the communities in Weydon-Priors and Casterbridge, in Upper Wessex, where individuals have the power to make decisions regarding their fate. I propose that Henchard fails to develop *qua* individual and as a member of society because he considers the individual and the social facets of development to be separate and chooses his action as a response to his desire rather than his reason. Following, I will illustrate that at the heart of Henchard's choices lies his fear of death, materialized as desire, first to rise on the social scale and then to be the father, a fear that the narrative uncovers when Henchard faces the uncanny effigy representing him, floating down the river. He does not understand that being a husband and father implicitly and inextricably binds the private sphere with the social network. Nevertheless, his failure makes him appear as a human being who, trying to fulfil his desire, is subject to error, inviting thus the readers' sympathy. And although to err is human, erring does not appear as justification for Henchard's actions; it merely suggests the destructive potential that lies in the individual's choices when based solely on desire.

Before beginning an examination of the novel, a few more comments regarding my approach to the reading of Hardy's *The Mayor of Casterbridge* are in order. The following interpretation does not concern Hardy's view of humanism *per se* but rather his humanistic approach in the novel. Broadly viewed, the novel reveals several factors that prevent Henchard from developing successfully: his split view of the private and the social selves, mentioned above, his lack of concern for other individuals, and his self-interest, the latter of which Spinoza viewed as a basic law of human nature. Henchard becomes an agent of disorder as a result of three key interconnected choices of actions rooted in an overpowering desire (and accompanying self-centeredness) rather than in reason. To wit, he chooses to auction his family while inebriated, to drink, and to lie (to the community, to Newson, and to Elizabeth Jane). Henchard's decisions result from his acting on the basis of his desire rather than on the basis of reason. Moreover, these are not the actions of a hero but those of a common individual.

Given the previous critics' analysis of Hardy's protagonists as tragic heroes in the Aristotelian sense and this study emphasis on desire as a motor of action in Henchard's life, the study will briefly consider desire from Aristotle's perspective. In *De Anima* (ca. 350 B.C.), Aristotle had shown that perception leads to desire, which in turn leads to action (Aristotle 1987), and that even when reason urges action, the individual is still capable of acting in response to desire rather than on the basis of practical reason. Through Henchard, Hardy dramatizes the fate of an individual whose desire overtakes reason and, as Spinoza would say, keeps him in bondage. Jeannette King has demonstrated that Hardy's protagonists are tragic heroes because they convince "through dialogue and action [...] rather than through analysis" (King 101). I would add a quotation from Aristotle's *Poetics* to claim that Henchard falls into adversity, "not through depravity, but through some kind of error" (Aristotle, 1995). And yet, I perceive Henchard as an unsuccessful or, to use a term applied to Victorian women, a fallen individual: he loses the respect of the community and falls not because he is a tragic hero but because he is a sad individual who does not reason but desires.

Desire is the mind's yearning, a form of energy channelled toward recognition and fulfilment. Whereas Spinoza defines desire as "the actual essence of man" (IIP56, Spinoza page 100), Jacques Lacan describes it as the unconscious made conscious through its objects, the "*objet a*", which he terms signifiers of desire (Lacan 1977). In the Lacanian schema, desire is ultimately of desire, the subject never being able to achieve it and instead moving along an endless chain of unfulfilling signifiers (Lacan 1981, 38). Henchard moves from a higher social status as a capitalist belonging to the middle-classes to the position of a husband and father. Jane Thomas has already established that Hardy's writings illustrate the role of desire in the conception of the self. Following J. Hillis Miller, Thomas sees desire to be generated by inaccessibility. Following Lacan, I consider desire to be present in the psyche from the end of the mirror stage onward. Developmentally, Henchard appears to be at the end of what Lacan terms the mirror stage, misidentifying with the figure of the capitalist, his *Ideal-I* ("The Mirror Stage", Lacan 1981) and entering the symbolic order of language and, most importantly, of desire. In the symbolic order, where all human knowledge, Lacan claims, is mediated by desire (5-6), Henchard's knowledge is mediated by the "promising youth's high aims and hopes" (Hardy, 2008) to succeed in the fodder business as a "free man", without the hindrance imposed by a wife and child. Now, a higher status seems to be a good and worthwhile goal, despite the sacrifice he is considering but upon which has not yet acted. He behaves as if overcome by what Plato terms *lēthē* in the *Phaedrus*, "forgetting" that gives rise to Henchard's illusion that the social facet is extricated from the private facet of individual development.

In other words, Henchard's social aspiration has two opposing forces which Plato attributes, in chapter 1 of *The Republic* (c. 380 B.C.), through Socrates, to the doctor, "the person who knows how to give protection from a disease who is also the expert at secretly inducing the disease" (I 333e, Plato 12). Henchard's social aspiration has therefore a similar function to that which Jacques Derrida refers to as *pharmakon*, a concept grounded in Plato's aforementioned double-edged idea. As Derrida says in *Dissemination* (1972), the *pharmakon* "acts both as remedy and poison, [...] can be – alternatively or simultaneously – beneficent or maleficent" (Derrida, 70). Desire is potentially transformative and motivates the individual but in Henchard's case, it is bound up with self-centeredness and leads to alienation. The novel offers a narrative of failed development resulting from self-centeredness, a development which, nonetheless, reveals Henchard as a human being. This is particularly so because he realizes his mistake when it is too late to be able to redeem himself. Hardy's principle aim in this novel is to illustrate not only the individual's choices in determining the course of his own life, but also the possible consequences resulting from these choices.

Henchard begins both the downward spiral of his failure as a husband and father but also the upward move as a self-made professional, by his auctioning of his family while intoxicated. Making choices under the guidance of his desire rather than of reason, he seeks for his own advantage without considering the unintended consequences of his actions. According to Spinoza, pursuing what is useful to oneself can lead one toward perfection, but reason dictates that one should act so as to secure and further the order and harmony in society (IVP35, Spinoza132). As the novel intimates, Henchard's failure is derived not from the primacy of self-interest, which for Spinoza is part of the individual makeup, but from his disregard for other individuals. Seeing himself trapped in a deadlock, as a poor young man with a wife and child and therefore no prospects, he desperately tries to find a way out but only for himself. Elaine Showalter has already pointed out that by selling his child, Henchard breaks the symbolic chain that connects him with his ancestors and offspring to enter society as "the new Adam, reborn,

self-created, unencumbered” (Showalter 57). This new Adam, I contend, believes he is a social individual, striving to become a capitalist, his *Ideal-I*, the phantom which is born out of his desire and, as the study will illustrate, his fear of death, dominates him most of his life. I concur with Annie Ramel, who maintains that Henchard fails because he is “a flawed and parodic father-figure” (Ramel 266). This failed father operates in a social realm in which he auctions his family, an act which Bruce Johnson astutely describes as Henchard’s passageway to a new paradigm: “The wife auction as a symbol is ... a complex revelation of Henchard’s passing from the roughly georgic and pastoral world to the world of mayors and towns and business” (Johnson 80). Under the influence of alcohol, which cancels his capacity to reason, Henchard believes that the ends justify the means and that by repressing his individual development, he is creating the circumstance necessary for his social development as a middle-class man.

The auctioning scene, a *locus classicus* of criticism, shows Henchard’s self-centeredness when, uninhibited by alcohol, brings about his crisis. In his analysis of the novel, Steven Earnshaw remarks that “Henchard’s drunkenness leads to the break-up of the family unit, literally, when he sells his wife at a fair after too much to drink” (Earnshaw 147-148), yet concludes that the novel “refuses to allow drink to be the scapegoat for all society’s troubles as many avowed” (152-153). As the narrative unfolds, “the drink problem” gains a more complex shape than the either/or middle-class worldview which Henchard, in common with his age, holds, and which Earnshaw expresses as follows: “Drink and you will suffer disease, poverty, violence, insanity, waste and death; give up drink and you will live in domestic bliss and affluence” (145). Although Henchard considers drinking to be the root of his problem, the novel suggests that it is his desire to pursue his *imago* that leads to his separation from his family and brings about his later fall. The rum-spiced firmity exacerbates Henchard’s self-centered desire to the point that it reduces everything to his desire to advance socially; hence, he decides that he has no use for his wife, so he queries: “Who’ll have her?” (Hardy, 2008), and then insistently asks: “Will anybody buy her?”. Bernard J. Paris considers Henchard to be “angry with himself, his wife, and fate for thwarting his search for glory” (Paris 57). The rum cancels Henchard’s locus of control, his desire overpowering his reason and revealing him as a man who has no affection for his wife and daughter. It is because of this lack that Henchard sets his wife and daughter’s exchange value, much as “these gipsy fellows do their old horses” (Hardy 2008), at five guineas. Henchard’s act of ridding himself of his family does not inspire a strong negative reaction on the part of the lower classes, since some of the guests confirm the practice among some people: “There’s them that would do that”.

The thought of money brings the rum-infused Henchard an irrational optimism about his future and the illusion of being able to control his life. Yet, blinded by desire and having no consideration for others, he fractures his individual development: he rejects fatherhood so as to seek social advancement through the acquisition of wealth and respectability. In so doing, he perturbs the sanctioned Victorian order while following a signifier that is not able to satisfy him at the ontological level. Because the inebriated Henchard has no emotions concerning his wife and daughter, he does not experience cognitive dissonance, a mental phenomenon whereby he would ensure that his beliefs and behaviours coexist harmoniously. Nonetheless, his social aspiration, a remedy for his poverty in his view, becomes a poison for him both as a family man and as a social individual.

Under the influence of this poison, Henchard not only values his family’s worth in money but also *devalues* the human worth of the two individuals, disturbing the normal function of the family and of society. Having decided to commit himself to materialistic pursuits that will bring him public recognition; he shows no recognition of the *vanitas* in such a pursuit at the cost of his

family life. He foreshadows a character developed four years later, by Oscar Wilde in his only novel, *The Picture of Dorian Gray* (1890). Dorian Gray “suffers” from the same conditions which have afflicted Henchard, namely, desire, narcissism and a split view of the self, but the former’s development follows a different path. Unlike Henchard, Dorian privileges his *individual* self-fashioning and Lord Henry’s idea of New Hedonism, rejecting social interaction. Through Henchard, Hardy’s narrative “about deficient fatherhood and the disasters that result from it”, as Ramel describes it (Ramel 259), exemplifies the narcissistic nature of desire and the split subject’s failure to achieve satisfaction, but not of an evil individual, as in Wilde’s novel. More importantly, it portrays Henchard as an agent of disorder who pursues his selfish desire by taking the capitalist idea that possessions such as a wife and a child represent money and can be exchanged *ad absurdum*.

In the morning, when Henchard is sober and reason inhibits desire, he half admits the folly of the auctioning but desire wins: he places the responsibility of the event onto Susan, exclaiming in frustration: “Yet she knows I am not in my senses when I do that!” (Hardy 2008). He regards, as Paris argues, the selling of his wife and daughter as immoral when he is sober (Paris 57). Nevertheless, I would emphasize, he does not assume responsibility for his action and instead casts blame on Susan, who due to the “simplicity of her intellect” (Hardy, 2008) took his words literally: “’Tis like Susan to take such idiotic simplicity”. In other words, she did not recognize that he was ruled by desire. Neither did she comprehend his desire to succeed in moving up the social ladder since she does not have any such aspirations. Eschewing personal responsibility, he considers Susan to be a destabilizing agent: “Meek – that meekness has done me more harm than the bitterest temper!” (18). His thoughts reveal his fear of public shame but not of the private shame, since he does not value Susan much as an individual.

Through the disorder he creates in his personal environment, Henchard also destabilizes the larger environment: he denigrates the importance of the institution of marriage sanctioned by the Victorian middle class. Breaking himself off from the domestic sphere, he intends to inhabit *only* the social sphere of class mobility. However, for the Victorians, the family, the basic unit of society, is under the authority of the *paterfamilias* – husband, father, and master, who is physically absent from the unit to practice his profession in the market place but returns to it and supports it. Scholars of Victorian culture such as Leonore Davidoff and Catherine Hall as well as John Seed have shown that family is a central institution of middle-class life. Whereas Henchard aspires to climb the social ladder, he causes the disintegration of his family, which in his view lies outside institutional boundaries, auctioning its other members as if they are useless “articles” (Hardy, 2008), as he calls them. Rationalizing his action, he finds reassurance in the fact that such practice is not new among men: “It has been done elsewhere – and why not here?”. By law, the Victorian woman gave up her name, identity, right to her own body, and legal existence through marriage. Therefore, Henchard legally owns Susan and their daughter. As an owner, he has the right to sell his property. Yet, in so doing he not only disregards the institution of marriage but also deprives himself of his wife’s help. As John R. Gillis contends, Victorian husbands could work in the marketplace, an amoral place, provided that they “could be rescued by women’s moral vigilance at home” (Gillis 74). Without Susan, Henchard may pursue his desire to ascend the social scale, but does not receive the help necessary for him to achieve the individual and spiritual wellbeing he needs to perform well in the marketplace.

The reader can only surmise Henchard’s strict self-discipline and ascetic life in the nineteen years which the narrative does not cover and during which he has become the Mayor of Casterbridge. The significance of the title lies in the fact that it specifies a person of a special sort, a mayor, that

is, a leader belonging to a higher class, a man who works for the benefit of and on behalf of others and who represents the views of a group or class. To have gained his social status, however, Henchard followed his desire, associated with femininity rather than with masculinity. In the Victorian ideas of masculine self-fashioning expressed by Thomas Carlyle ("Past and Present" and "Shooting Niagara: And After?")¹, and Samuel Smiles (*Self-Help*), among others, self-discipline and asceticism play a chief role². This ascetic self-fashioning occurred during the explosive development of industry acclaimed by Carlyle, for example, who saw the "Captains of Industry" as "Fighters against Chaos, Necessity and the Devils of Jötuns" (Carlyle 163), and during the discussions engendered by the Darwinian Theory. As a result of such discussions, the Christian God, whose representative in the family is the father, became decentred by money. Sigmund Freud contends that one of the effects of civilization, which we can apply to industrialization and its impact on the Victorians, is that men withdraw from women, constantly associating with men and thus removing themselves from their duties as husbands and fathers (Freud 1962). Thus, we can suggest, with Freud, that a crisis of Victorian masculinity and consequently of paternity emerges in Hardy's novel through Henchard.

The shift to an economic and ideological middle-class development experienced by an increasing number of individuals results in the focus on the problems of assessing one's value and of finding one's place in society. Often times, the problem is not how society perceives individuals but how they perceive themselves when they assume the patriarchal, hegemonic, middle-class viewpoint, according to which they do not have the values that make this class "the moral heart of Victorian society" (Altick 29). Therefore, by accepting the viewpoint that ousts them from the middle-class, some characters doom themselves to failure; they place themselves in a dilemmatic position in that, because they do not possess middle-class values, they cannot become a part of a middle class community. For characters who aspire to attain value within the middle-class have to prove that they live according to the values of this class – domestic *and* public virtues such as chastity, work ethics, cleanliness, religiosity, which in turn enforce the Victorian middle-class norms. According to these norms, Earnshaw contends, drink is "a distinctly class issue" (Earnshaw 144); it is an activity of the poor class. And Henchard gives up drinking on account of his desire to move up the social scale.

Henchard makes an attempt to achieve a level of order and harmony as dictated by his desire. He appears as though he is making a pact. Critics have interpreted Henchard's act of giving up drinking as a sign of repentance (Earnshaw 148), and alternatively, as a form of self-punishment (Paris 57). Yet the free indirect discourse through which the narrator conveys the protagonist's thoughts does not indicate either repentance or self-punishment; rather, it expresses his decision to tolerate Susan's reaction without complaint: "When he was calmer, he turned to his original conviction that he must somehow find her and his little Elizabeth-Jane, and put up with the shame as best as he could" (Hardy, 2008). Abstinence constitutes a necessary change that allows Henchard to dedicate his energy to his work and social advancement. In a short, melodramatic scene, he determines that before finding and facing Susan he must take an official oath, in his words, to "register an oath", which has to be "a greater oath than he had ever sworn before", given, we may surmise, the seriousness of his deed. For this, he needs the necessary props: "To do it properly he required a fit place and imagery". On his knees and with his head on the Bible, he swears to give up drinking not for good but for twenty-one years, the number reflecting his age. After the oath he has a sense of relief "at having made a start in the right direction".

His attempt to restore his family unit is too feeble, his goal being to protect his reputation by keeping the truth about his conduct from surfacing. And he does so not out of love for himself,

which Spinoza associates with reason (IVP18, Spinoza 125), but rather out of repugnance for himself. The narrator's commentary is revealing:

The truth was that a certain shyness of revealing his conduct prevented Michael Henchard from following up the investigation with the loud hue-and-cry such a pursuit demanded to render it effectual; and it was probably for this reason that he obtained no clue, though everything was done by him that did not involve an explanation of the circumstances under which he had lost her (Hardy 2008)

When he understands that his family may have emigrated with Richard Newson, the sailor who had bought them, he stops the search, choosing to further his social development. About two decades later, the prosperous hay-trusser / mayor is an esteemed middle-class man with financial acumen and a solid work ethic. Despite the fact that Henchard is not the exceptional hero depicted by Aristotle in his *Poetics* (c. 335 B.C.), he is brought face to face, as King would say, "with the past he tried to escape" (King 97): Susan and her daughter have come to Casterbridge.

The Ring of Casterbridge, a Roman amphitheater where Henchard meets Susan, does not enable his introspection. This space calls to mind, significantly, both the fall of an empire and the shape of a ring, the latter being symbolic of union through marriage. As a vestige of the past, the Ring, a remnant of what the past was, suggests the transience of great individuals and their achievement through its 'presence'. Also, as a *memento*, it intimates the importance of the past for the present. The vestige overturns the idea of progress, an idea with which the Victorians struggled to come to terms but which Henchard overlooks. Compared to the rise and fall of the Roman Empire, Henchard's rise and fall later in the novel appear derisory; nonetheless, his is the fall of a human being who becomes aware of his mistakes too late. This "huge circular enclosure" (Hardy 2008), as the narrator describes it, does not make Henchard feel threatened despite the fact that it represents a place of "intrigues" rather than a place "of happy lovers".

Henchard feels compelled to marry Susan again not out of affection for her but out of fear of public shame if people found out what he had done in his youth. He seems to recognize his having auctioned his wife and daughter as an act that deems him unfit to lead and serve the community as mayor. That is why, his first utterance in Susan's presence is to reassure her that he has given up drinking, which in his view lay at the heart of his problem: "I don't drink" (Hardy, 2008). In the place of secrecy, Henchard succinctly lays out his plan to further his secret, that is, to lie to the community he is leading: "I meet you, court you, and marry you, Elizabeth-Jane coming to my house as my stepdaughter. The thing is so natural and easy that it is half done in thinking of it. This would leave my shady, headstrong, disgraceful life as young man absolutely unopened; the secret would be yours and mine only". As the novel unfolds, Henchard's past, to which he alludes in the enclosure of the Ring, gains meaning for the present, moving outside the Ring: the secret inside the marriage (symbolized by the ring) goes outside, into the community. The reality of the Ring calls for the Casterbridge individuals to look into the abyss and face death, to learn from their mistakes rather than to perpetuate them. Yet, Henchard appears to be oblivious to the imminence of death. However, he has a different attitude towards Susan, whom he treats as a worthy individual capable of reasoning – he allows her to propose another plan: "If you can hit upon a better one we'll adopt it". Furthermore, he asks her for forgiveness and when she hesitates to give him an answer, he sounds convinced that he will make up for past mistakes, asking her to judge him by "his future acts". Because desire is of desire, social success, a mere *objet a*, does not fulfill Henchard's desire.

Having realized the limited benefits of social success, now Henchard shifts his desire; he intends to reorder his priorities and alter the direction of his life by re-fashioning himself at an individual level. He wants to acquire the position that he had rejected in his youth, *i.e.*, that of the father. Yet, he does not understand what fatherhood entails. From a Darwinian standpoint, fathering ensures the survival of the bloodline through offspring. As John Tosh has noticed, the father has sons who carry forward his name and lineage (Tosh 4). In his capacity of father and husband, the man is tied to the domestic sphere. Claudia Nelson examines men's domestic invisibility, challenging Davidoff and Hall's claim concerning the father's contribution to his children's education, careers, and marriage. In Nelson's view, at this time families were undergoing change, men being increasingly identified with their position in the marketplace rather than their home (Nelson 3). The depiction of fatherhood in Victorian novels reveals Victorian anxieties concerning the future of the family, its abating cohesiveness. Henchard wants Newson's daughter, whom he mistakes for his offspring, to take his last name and tells her that he had named her Elizabeth-Jane: "'Twas I that chose your name, my daughter; your mother wanted it Susan" (Hardy, 2008). Thus, he arrogates the right of the father to name his child.

When his fortune declines, after the bidding he hired Jopp to conduct against Donald Farfrae, Henchard needs Elizabeth-Jane's affection and wants to strengthen the bond between him and her. This type of non-biological paternal bond was established in fiction, *mutatis mutandis*, by Charles Dickens in *Great Expectations* (1860) over two-and-a-half decades before the publication of *The Mayor of Casterbridge*. While Abel Magwitch dedicates himself selflessly to his adopted son, Pip, and helps him to become a gentleman, Henchard merely uses Elizabeth-Jane for his benefit. As Paris contends, she is for him "both a source of affection and a means of restoring his pride" (Paris 62), as well as a means "to suppress his aggressive tendencies". Being aware of how significant her presence has become for him, Henchard goes to great lengths to keep her in his life, including lying. Since he lacks empathy, his fashioning as a father is guided, as his fashioning as a capitalist had been, by selfish desire. He persists in his selfishness even after he sees the effigy.

The effigy floating in the water representing Henchard jolts him into consciousness, revealing his fear of death. This ghostly object is an example of the uncanny (or *Unheimlich*), theorized by Sigmund Freud in his 1919 analysis of E. T. A. Hoffmann's Gothic tale "The Sandman" (1817). In *The Uncanny* (1919), Freud depicts the uncanny as the deeply familiar desire or fear materializing into something fearful and frightening. Whereas at the beginning of the novel Henchard fears the deadlock in which he finds himself, toward the end he is afraid of death. The floating effigy is a fitting representation of Henchard's fall and a way to foreshadow his death. Unlike the vestiges, the effigy horrifies Henchard, uncovering what is familiar, *i.e.*, his fear of death, which once took the estranged form of social failure and has now returned to its original meaning:

In the circular current imparted by the central flow the form was brought forward, till it passed under his eyes; and then he perceived with a sense of horror that it was *himself*. Not a man somewhat resembling him, but one in all respects his counterpart, his actual double, was floating as if dead in Ten-Hatches-Hole. (Hardy 2008)

Now, Henchard sees himself as others see him and becomes aware of his alienation. Referring to O. Rank's work, Freud reminds his reader of the former's link between mirror-images and the fear of death (Freud 2003, 142). As a mirror-image, the effigy becomes what Freud would call "the uncanny harbinger of death" (142), foreshadowing Henchard's demise. Confronted with the

imminence of his death, Henchard refuses to reveal the truth to Elisabeth-Jane but when she volunteers to help him, unaware of his lies to her biological father, he asks her, incredulously: “How will you forgive all my roughness in former days?” (Hardy, 2008). He persists in his ways, refusing to reveal his secret.

The only change that Henchard has made is that now he is sacrificing his social fashioning to focus on his individual fashioning, still not recognizing the imbrications of these two facets. To ensure that he continues to play the paternal role, he lies to Elizabeth-Jane’s biological father, telling him, “without hesitation” (Hardy, 2008), that she is dead. Family relationships require sacrifice, the reverse of what Henchard has been doing. Sacrifice, combined with truth, has the potential to increase trust and to strengthen the connection between people. Henchard’s mimetic desire obscures his reason, so he wants “a greedy exclusiveness in relation to her”. By trying to keep his non-biological family together, he threatens to keep another family apart. He has become prey to his own egotism and feels no compassion for Newson: “His grief – what was it, after all, to that which he, Henchard, would feel at the loss of her”. Above all, he does not take into account Elizabeth-Jane’s right to be reunited with her real father, acting as an agent of disorder. He surprises her by taking “her hand with anxious proprietorship” (274), a gesture which she takes for affection. However, the narrator clarifies that Henchard’s is not the selfless attitude of a father but instead the attitude of an egoist: “The sympathy of the girl seemed necessary to his very existence” (279-280). That is why he does not reveal to her the truth – that her father is alive, although he intuits that she would soon discover it, preferring to live in the moment and keep the illusion of the familial bond.

Henchard is not willing to sacrifice his pride for the right motive. He justifies his lie to himself by claiming that it was not the result of reason but of intense emotion: “To satisfy his conscience somewhat, Henchard repeated to himself that the lie which had retained for him the coveted treasure had not been deliberately told to that end, but had come from him as the last defiant word of a despair which took no thought of consequences” (Hardy 2008). His egotism goes as far as to distress Elizabeth-Jane by telling her that he is to leave Casterbridge, withholding the information that her real father is looking for her. His gesture is a sacrificial act for the wrong reason. Henchard does intend to ask her for forgiveness after she is reunited with her father, but when he faces her and hears her reproach, his pride stands in the way. For him, pride is a protective shield against suffering, but in fact, it holds him back from establishing a connection with Elizabeth-Jane, possibly with Newton, as it had prevented him from connecting with Farfrae. His reputation takes precedence over honesty, the basis of a healthy relationship. He avoids honesty not out of a desire to be a good adoptive father but to avoid conflict. In his view, his lies and withholding the fact that Susan had lied to him about Elizabeth-Jane, represent desperate attempts to maintain the girl’s love for him; they are “last desperate throw of a gamester who loved her affection better than his own honour”. That is why, he does not re-initiate the relationship, giving up without thinking through his role in Elizabeth-Jane’s life. He becomes withdrawn and asks her to forgive him not for having lied but for bothering her on her wedding day. In his youth, Henchard had devalued the worth of his family; now, the narrator asserts, Henchard devalues his own worth: “He did not sufficiently value himself to lessen his sufferings by strenuous appeal or elaborate argument”. He has given up. Therefore, he promises Elizabeth-Jane not to bother her ever again, ending his speech proudly with a simple “Good-bye!”, cutting off contact. Even in the last moments of his life Henchard is guided by emotions, using his will as a tool to protect himself *post mortem* by foregrounding, once more, his self-centeredness. Similarly to Gwendolen Harleth

in George Eliot's *Daniel Deronda*, he chooses to lose triumphantly if he cannot win triumphantly, to remain in control even after his death.

A concern with the fate of the father and the family in a changing society underlies Hardy's *Mayor of Casterbridge*. Henchard's story depicts the development of a man led by emotions and believing that the individual and the social self-fashioning are two separate aspects of human life. Hence, he follows one at the expense of the other, refusing to see their symbiotic relationship. By teaching its readers that the individual and the social selves have an organic existence, the novel also illustrates how one's choices in either sphere affects one's path in life. Henchard's desire-driven choices mask his fear of death, which first he supplants with the fear of social failure. His fear increases and returns to its original form when he sees the uncanny figure of the effigy. Because Henchard follows his desire and refuses to reason, he believes that he can either make his way up the social scale outside fatherhood or try to be a father by disregarding middle-class mores. First, he attempts to gain social ascendance while giving up his roles and responsibilities as a father and husband, two roles which inscribe individuals both in the private and in the social sphere. Because he does not reason, he does not understand that the family unit represents a microcosm which entails a macrocosm, that of society as a whole, and that by disrupting the order within his family, Henchard disrupts societal order. After he reunites with Susan, he supports her financially, but the novel offers no indication that he receives spiritual strength from her. Then, although the vestiges do not increase his awareness and do not enable his reasoning, Henchard reconfigures his desire and pursues the role of the father. He acts like this only to use his right to provide for and name his daughter. Yet, his focus on his desire in the private realm at the expense of his social position results in his withdrawal from society. Since Henchard is not ready to be a middle-class father, he cannot remain either as mayor or as Elizabeth-Jane's father in Casterbridge. He has become alienated from both the private and the social sphere, functioning as an agent of disorder in both, the narrative supplanting him with his will. His death away from everyone, at the cottage of Abel Whittle, represents not only a self-removal from the social and personal sphere but also a restoration of the order which he had disturbed in the first place. His character is his fate, but his fate is not the fate of the society.

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