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VALUE ADDED TAX (VAT) AND REVENUE ALLOCATION IN NIGERIA

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Abstract

The study investigated the relationship between Value added tax revenue and Revenue allocation in Nigeria within the period of 2000-2020. Its specific objective was to ascertain the relationship between VAT and Federal Allocations; ascertain the relationship between VAT and State allocations; and determine the relationship between VAT and Allocations to local governments. Expo facto design was adopted for the study while secondary data was utilized for the study. Data was sourced from Annual Statistical bulletin of Central Bank of Nigeria 2020. The data collected was from the period 2000 – 2020. Descriptive statistics and trend analysis were used for data analysis while Regression was used testing of the hypothesis. The result of the study shows that VAT has a positive and significant relationship with Federal allocation in Nigeria; VAT has a positive and significant relationship with State allocations; VAT has a positive and significant relationship with Local government Allocations in Nigeria. The study therefore recommends that Federal government should not be left out in the sharing of VAT revenue as clamoured by some quarters where there is agitation for resource control especially the issue of VAT administration and collection; There should be improved and agreed equitable sharing formula that will ensure that the States and Local governments get more share of the allocation especially as it concerns sharing of the VAT revenue; the Local governments should not be starved of the allocated funds by the states, especially as it concerns their share of VAT and other state allocations.

Keywords: Federal Allocations, Local Government Allocations, Revenue Allocation, State Allocations, Nigeria, Valued Added Tax

1. INTRODUCTION

It is argued that every government pursues economic development by trying to achieve macroeconomic objectives in a particular system of government, thus they operate various systems of governance that enables them to achieve this goal. The various systems of government include federation, unitary, and confederation. The Nigeria's system favours federation. The federation of Nigeria achieves her macroeconomic objectives by performing the functions of resource allocation, income distribution/redistribution, and economic stabilization within the central government, that is, federal government and its units (states and local governments). This system of performing government functions in different tiers of government is called fiscal federalism (Dang, 2013).

Fiscal federalism is a system of taxation and public expenditure in which revenue-raising powers and control over expenditure are vested in various levels of government within a nation, ranging from the national government to the smallest unit of local government (Anyaf, 1996). Basically,

fiscal federalism emphasizes on how revenues are raised and allocated to different levels of government for development. A large body of literature exists on Nigeria's fiscal federalism particularly with reference to revenue allocation. Despite the profound and lengthy discussions that have taken place on the subject for about four and half decades, consensus has not been reached concerning the optimal formula to adopt to achieve desired economic development. Thus, the issue of revenue allocation has been a recurring theme in Nigeria's fiscal federalism.

There is the problem of how to allocate revenue to different tiers of government in relation to the constitutionally assigned functions. The discordance between fiscal capacity of various levels of government and their expenditure responsibilities, the non-correspondence problem, is a striking feature of the Nigerian federal finance (Mbanefoh & Egwaikhide, 2000; Dang, 2013). There is also the problem of how revenue should be shared among the states and local councils among others, thus stress the importance of revenue allocation and its sharing formula in Nigeria.

The importance of revenue generation, allocation as well as its distribution towards maintaining both the existing and new socio-politico-economic structure in any economy be it centrally planned, market or mixed economies cannot be overemphasized. To this end, what revenue is to an individual or a firm is what it is to the government. Thus, revenue allocation and its distribution remain a vitally sensitive issue which continues to spark off reactions from all stakeholders at all times (Olofin et al., 2021). This issue has become even more pronounced in Nigeria particular, due to its many ethnic nationalities of which all are clamoring for resource control and the need to give them a sense of belonging. Some have called for a review of the revenue sharing formula in recent times while others have continued to agitate for the control of resources including the issue of control of VAT proceeds.

As Olofin et al. (2021) succinctly pointed out that in recent years, the issues of resource control, revenue allocation and fiscal federalism have dominated discussions at various levels of Nigeria's political debate. Like most federal systems, Nigeria has a revenue distribution system in which the federal government shares revenue with the states and local governments. Different formulas at different times have been adopted. Similarly, at different times, ad hoc commissions have been set up to determine the allocation formulae and criteria, yet each formulae adopted seems not to be enough and thus the agitation continues. The agitation has in recent times shifted to the control of VAT proceeds- whether to be administered and collected by the states or federal government. This issue is still in court and until the court decides, the thorny issue still remains (Teriba, 2021).

Prior to the commencement of value added tax (VAT), the three tiers of government in Nigeria relied heavily on their share of federally allocated revenue which in turn depended on the revenue from crude oil and developments in the international petroleum market regulated by Organization for Petroleum Exporting Countries (OPEC). This has serious implications for government finances. Thus, government revenue had been unstable, showing up in deficits and poor delivery of services. This explains the use of tax contractors by some state governments and implementation of various kinds of levies by State and Local Governments to improve their revenue (Ohiomu &

Oluyemi, 2019). With the introduction of VAT pool to the federation account, brings a relieve to the government at all level, as available revenue for sharing increased and thus it becomes increased revenue for growth and development of the nation (Ordu & Nkwoji, 2021).

Value Added Tax (VAT) is an indirect tax levied on all merchandises and amenities manufactured or rendered in a country except for supplies and facilities that are VAT relieved. VAT is a levy on the number of products and provisions that the end user ultimately endures, and its collection is designed and made possible at each phase of the manufacturing and delivery sequence. It implies that VAT is a consumption tax collected from individuals who only suffer a little incidence of taxation that allows the persons who pays VAT not to bear the entire cost of the charge (Omodero, 2020), thus this taxation becomes a veritable means of increasing government revenue available for allocation to the three tiers of government in Nigeria.

Several studies mainly exploratory (such as Olofin et al, 2021, Omodero 2020; Ohiomu & Oluyemi, 2019; Dang, 2013; Suberu, 2006) were carried out on how revenue is shared within the federal government, state governments, and local governments and the basis of sharing the revenue to these federating components. But these studies could not empirically study the impact of the Value added tax revenue on the revenue allocation to the ties of government in Nigeria. Other studies, such as, Salami (2011), and Usman (2011) carried out empirical studies on the effects of the level of decentralization of government activities including revenue allocation on Nigeria's economic development using econometric analysis. None of these studies to the best of our knowledge and literature review utilized the current variables of this study which is allocation to federal government, state government and local governments to ascertain the relationship between the variables and VAT revenue. Consequently, this study intends to investigate how VAT has impacted the revenue available to different arms of government in Nigeria for economic development through the allocations they receive on an annual basis. In the light of the above issues raised, the researchers formulated the below mentioned hypotheses in their null form to guide their investigation thus:

HO₁: There is no significant relationship between VAT Revenue and Allocation to Federal Government in Nigeria.

HO₂: There is no significant relationship between VAT Revenue and Allocation to State Governments in Nigeria.

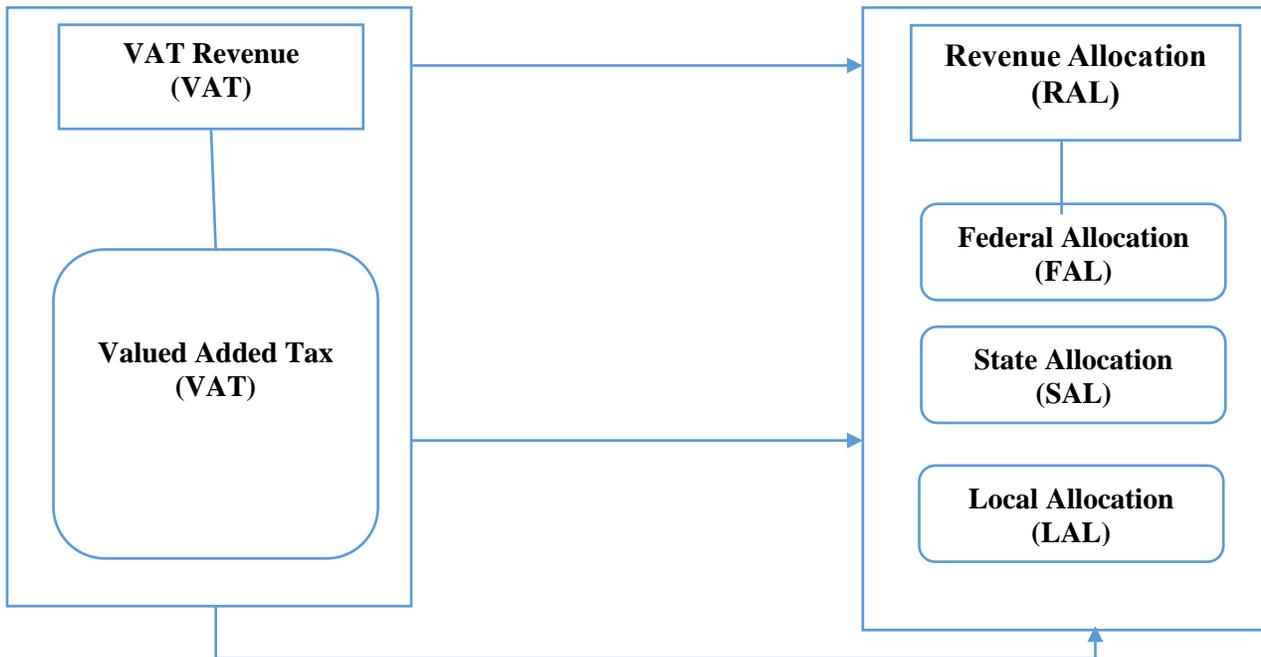
HO₃: There is no significant relationship between VAT Revenue and Allocation to State governments in Nigeria.

The study is divided into five sections. Section I, introduced the study. Section II examined concepts on which this work is based and reviewed existing related literature while Section III focused on the methodology adopted in this research. Section IV presented and discussed the results obtained while Section V concludes the study and made necessary recommendations.

2.0 REVIEW OF RELATED LITERATURE

2.1 Conceptual Framework

The conceptual framework of this study is viewed on presumed causal relationship between value added tax revenue and Resources allocation to various arms of government in Nigeria within the periods of 2000 – 2020. While VAT serves as the independent variable, resource allocation serves as the dependent variable. The measures of Revenue allocation are Allocation to federal government, allocation to state governments and allocation to local governments. The hypothesized relationship tested is depicted on the diagram below.



Source (Oladimeji, 2014; Oraka et al., 2017; Teriba, 2021; Adejokun & Nami, 2021).

2.2 Conceptual Review

2.2.1 Value Added Tax

Value added tax (VAT) refers to an ingestion charge imposed at every phase of the absorption sequence and suffered by the ultimate end user of the product or service (Oraka et al., 2017). In Nigeria the implementation of Value Added Tax Act in 1994 has provided a significant amount in the revenue accrued to the government (Omesì & Nzor, 2015; Omolehinwa & Naiyeju, 2015). Somorin (2019) however pointed out that there have been agitations to raise the tax rate of Value Added Tax in Nigeria stating that Nigeria has one of the lowest VAT rate in the world as at that time which was 5%. However, in 2020, VAT tax rate was revised to 7.5% after previous unsuccessful attempts to revise it. In August, 2021 there have been agitations by various States in Nigeria to decentralize the collection of VAT in Nigeria (Audu & Ajibade, 2021).

A review of the VAT rate across nations shows that VAT in Cameroon is at 19.25%; South Africa 14%; Zambia 17.5% and Egypt 10%. Others are: India (between 5.5% - 14.5%); UK (17.5%) and Kenya (12-16%) respectively (Ordu, 2021), thus justifying the call for the increase in VAT rate in Nigeria. Prior to the implementation of the 2020 Finance Act in Nigeria and under the VAT Act of 1993 as amended, it was obligatory for an individual seller to levy and pull together the VAT at a uniform ratio of 5% on all billed sums for merchandises and services that are not freed from VAT. However, with the introduction and implementation of the 2020 Finance Act, all materials and business activities that are not excused from VAT attract a charge of 7.5% VAT, which accounts for 50% increase in the VAT rate. Sections 10 and 11 of VATA offers the dissimilarity amid contribution VAT and production VAT. Involvement VAT refers to the tax paid to suppliers on the purchase of taxable materials and financial undertakings while the productivity VAT is the tax received from customers on the value of taxable supplies and business activities sold or rendered (Akhör & Akundayo, 2016; Andersen Tax Digest, 2020). According to Ordu, (2021), if the VAT received on behalf of the government (production VAT) in a specific period surpasses the VAT paid to other individuals (contribution VAT) in the same period, the taxable individual or company is expected to pay the variance to the government periodically, which is monthly. Wherever the converse becomes the circumstance, the taxpayer is permitted to a reimbursement of the extra VAT funded or he may virtually obtain a tax credit of the surplus VAT from the administration (Andersen Tax Digest, 2020). Following the affirmation of (Umeora, 2013), every export is zero ranked for VAT, i.e., no VAT is billed on products shipped out to other countries for sale. Furthermore, VAT is allocated with the legal tender of the business under which products or financial deeds are contracted (FIRS, 2020).

Sections 8, 28 and 35 of VATA (as amended) enforces a fine of N50,000 for the initial month of not being able to register and inability to notify the Federal Inland Revenue Service (FIRS) of variation in business address or perpetual termination of trade or business and failure to file returns (FIRS, 2020). All other subsequent months of failure attract a fine of N25,000 each month in addition to the initial N50,000 in the first month that the disappointment ensues (FIRS, 2020). However, failure to remit VAT attracts a penalty of the VAT, in addition to 10% of the VAT plus interest rate based on the Central Bank of Nigeria's prevailing monetary policy rate (FIRS, 2020). The new Finance Act 2020 provides punishment for late filing of VAT returns. Inability to remit VAT revenues attracts a penalty of N50,000 in the first month of defaulting and N25,000 for the succeeding months. Due to the upward review necessitated by the Finance Act 2020, the penalty

was reviewed upward from N10,000 to N50,000 for the first month and N5000 to N25,000 for the successive periods the taxpayer fails to file VAT returns. The fine for failing to register for VAT is appraised upwards to N50,000 for the first month of failure and N25,000 for each consequent month of failure to register for VAT (Omodero, 2020).

The components of VAT are as follows: a) VAT on Intrastate/Intra-LG Transactions; b) VAT on Interstate Transactions; c) VAT on International Transactions- VAT on international transactions that transcend interstate and intrastate transactions are legitimately collectible and retainable by the FG and redistributable among all States based on equality of States/LGs and population (Teriba, 2021). Teriaba (2021) further noted that The Value Added Tax (VAT) was introduced in 1993 and it replaced Sales tax in the states. The formula for the distribution when it was first introduced was 50% to FGN; 35% to the States; and 15% to LGAs. With effect from January 1999, the formula was adjusted as follows: FGN 15%, States 50% and LGAs and area councils of the FCT 35%. The share of the States and that of the local Governments is shared amongst them using the factors of Equality 50%, population 30% and derivation 20%.

Looking at the issue of resource control as it pertains to VAT and revenue allocation, Adejokun and Nami (2021) argued that if states are allowed to collect VAT, many of them will be encouraged to develop that aspect of taxation as opposed to going to the tax pool to share. In view of the fact that a lot of the states are trying to beef up Internally Generated Revenue (IGR), allowing them to collect and administer VAT will boost the IGR of states. As much as possible, there should be a way of devolving taxing powers and responsibility to subnational governments as that is what true fiscal federalism is all about. Furthermore, while VAT is currently shared in the ratio of 15 per cent to FG; 50 per cent to states and 35 per cent to local governments, and hence the clamour for states to collect and administer VAT in their various states continues, others argue that it will become difficult if not impossible for states to individually administer VAT within their jurisdictions for lack of capacity. Companies operating in multiple states may also have difficulties dealing with different laws in different states. Others also suggested that Federal Government may resort to appropriating the sizeable contributions of VAT accruing from Customs sources and treat it as independent revenue (Adejokun & Nami, 2021).

2.2.2 Concept of Revenue Allocation

Olowononi (2000) broadly defines revenue allocation to include allocation of tax powers and the revenue sharing arrangements not only among the three levels of government but among the state governments as well. Under government's distribution function, it redistributes incomes and resources to promote national unity and equity. Revenue allocation can be described as a method of sharing the centrally generated revenue among different tiers of government and how the amount allocated to a particular tier is shared among its components for economic development (Dang, 2013). According to the resource allocation function of the government, revenue is allocated to federating units of a country for economic development, otherwise called fiscal federalism. Nigeria's fiscal federalism has emanated from historical, economic, political, geographical, cultural, and social factors. In all of these, fiscal arrangements remain a controversial issue in allocating distributable pool account (DPA) of the federation since 1946 (Ekpo, 2004).

A federation emerges either by aggregation of previously independent sovereignties to become a single sovereign state such as Australia, Canada, and United States, or by devolution, that is, decentralization of certain level of political authority to subnational governments within a sovereign state such as Nigeria, India, and Pakistan (Dang, 2013). Thus, along this line, fiscal federalism could be taken to mean a constitutional arrangement or a system of government where revenue and expenditure functions, otherwise called fiscal responsibilities, are divided among the tiers/levels of government, that is, federal, state, and local governments (Akindele, 2002). In undertaking this division, economics emphasizes the need to focus on the necessity for improving the performance of the public sector and the provision of their services by ensuring a proper alignment of responsibilities and fiscal instruments. The Nigerian Federal system plays a preeminent role in this distributive process. Succinctly, owing to its explicit legitimation and accommodation of sectional-territorial constituencies (Dang, 2013)

2.2.3 Revenue Allocation Overview of Nigerian Situation

Revenue sharing in Nigeria has evolved significantly over the years. Revenue allocation, as it involves the federating system allocating resources to their constituent units for economic activities has been said to have a major issue in the Nigerian political system even from the pre-independence era. At any level, the whole essence of Revenue Allocation is to necessitate a just and fair revenue sharing system. Since Nigeria gained independence in 1960, the relationship between federal government functions and the lower tiers of government have not changed significantly only for few exceptions during the military regimes. About nine fiscal commissions were appointed to examine Nigeria's revenue sharing arrangements between 1948 and 1988. These include Phillipson (1946), Hicks (1952), Chick (1954), Raisman (1959), Binns (1964), Dina (1968), Aboyade (1977), Okigbo (1979), and Danjuma (1988) commissions (Ekpo, 2004).

In Nigeria's post-independence, so many fiscal review commissions were set up by different governments to work out an acceptable revenue allocation formula for all tiers of government. Just like other post-independence formulae on revenue allocation, the Okigbo Commission's recommendation was accompanied with controversy, disagreement, and conflict. In recent years, the issues of resource control, revenue allocation and fiscal federalism have dominated discussions at various levels of Nigeria's political debate. In Nigeria, revenue allocation is taken as the distribution of National Revenue among the various tiers of Government in the Federation in such a way as to reflect the structure of Fiscal Federalism as shown in Table 1. Federalism refers the existence in one country of more than one level of government, each with different expenditure responsibilities and taxing powers (Ohiomu & Oluyemi, 2019).

Table 2.1: Revenue Allocation formula in Nigeria		
S/No	Beneficiary	Percentage of revenue shared (%)
1	Federal Government	48.50
2	36 states of the federation	26.72
3	774 local governments	20.60
4	Centrally controlled special Fund	4.18
	Total	100

Source (Adapted from Ohiomu & Oluyemi, 2019)

The centrally controlled special funds are allocated on the basis of the following indices and percentage weights: equal shares to each state or locality at 40%; population at 30%; social development needs at 10%; land mass and terrain at 10% and internal revenue generation at 10% (Dang, 2013). Normally each tier of Government should be given adequate resources to be able to discharge its constitutional responsibilities, which is very important for the preservation of the autonomy of the constituent units. The importance of revenue generation, allocation as well as its distribution toward maintaining both the existing and new socio-political economic structure in any economy be it centrally planned, market or mixed economies cannot be overemphasized, hence the need to continually shore up the revenue base, thus VAT revenue is one of the ways this can be done.

2.2.4 Nigerian Revenue Allocation Principles

Revenue allocation refers to the redistribution of fiscal capacity between the various levels of government, or the disposition of fiscal responsibilities between tiers of government. Revenue sharing arrangement is at two levels: One is the vertical allocation, which is among federal, state, and local councils, second is the horizontal allocation, among the states and the local governments (Ohiomu & Oluyemi, 2019). Revenue allocation is meant to attain two broad objectives, namely, efficiency and equity. However, the allocation formula is guided by certain allocation principles like population, equality of states, internal revenue generation, and landmass and principle of derivation. In other words they are categorised as Principle of Need, Derivation Principle, Principle of national interest, and Principle of independent revenue. These principles according to Salami (2011) are exhaustively explained below:

Derivation principle. The principle believes that revenue in the federation account should be allocated on the basis of each state's contribution to total revenue. That is, all revenue which can be identified as having come from, or can be attributed to, a particular region or state should be allocated to it. This principle was criticized because it makes rich states (or naturally endowed states) richer because the more endowed or developed states will contribute more to the federation

account, starving the less endowed or less developed states of developmental funds. It can therefore, leads to greater disparity among the States and subsequently lead to instability within the country.

Principle of need. The principle advocated that states are not equally endowed with resources, some states are more populated and developed than others, and therefore, more resources should be given to the less developed states to bridge the gap in development.

Principle of national interest. The principle is based on the importance attached to developing all states to increase progress and sense of belonging. It will promote national unity by sharing the revenue in the federation account equally among States. This formula was to strike a balance between equity, and needs of national economic/ political growth leading to stability.

Principle of independent revenues. This principle advocates that states can introduce or charge revenue-yielding taxes within the state as long as it is a stable source of revenue but must conform to the principles of taxation within the economy and take into consideration national interest. The above principles of revenue allocation indicate that there might be tradeoff between conflicting items such as derivation, need and national interest. Hence, optimum tradeoff can be tolerated for development. The above principles were guided by the 1999 Constitutions of the Federal Republic of Nigeria, which is currently undergoing reviews and amendments with the Legislative arm of Government.

2.2.5 Components of Revenue Allocation Formula in Nigeria

It is argued that there are two components of the revenue allocation formula used for the disbursement of the Federation Account in Nigeria namely Vertical Allocation Formula (VAF) and Horizontal Allocation Formula (HAF). These are discussed below: **The VAF.** This formula shows the percentage allocated to the three tiers of government that is, federal, states, and local governments. This formula is applied vertically to the total volume of disburseable revenue in the Federation Account at a particular point in time. The VAF allows every tier of government to know what is due to it; the Federal Government on one hand and the 36 States and 774 Local Governments on the other (Bashir, 2008).

The HAF. The formula is applicable to States and Local Governments only. It provides the basis for sharing of the volume of revenue already allocated enblock to the 36 States and 774 Local Governments. Through the application of the principles of HAF, the allocation due to each State or Local Government is determined. Thus, it can conveniently be concluded that the VAF is for inter-tier sharing between the three tiers of government while the HAF is for intra tier sharing among the 36 States and the 774 Local Governments in Nigeria (Ohiomu & Oluyemi, 2019).

There are also institutions that play key roles towards revenue allocation in Nigeria. These are institutions such as Revenue mobilization and fiscal commission, the central bank of Nigeria and other. Table 2.2 shows the key players and their roles. However, there are calls on the nation to strengthen her institutions and governance to achieve efficiency and effectiveness in the economic process (Ohiomu & Oluyemi, 2019).

Table 2.2 Key Players in Revenue Allocation in Nigeria		
S/No	Institution	Role
1	Revenue Mobilisation, Allocation and Fiscal Commission (RMAFC)	-Monitors revenue accruals into and disbursements from the federation account. - Determines the allocation indices.
2	Central Bank of Nigeria (CBN)	-Serves as a custodian of the federation account where disbursement is made
3	Federation Accounts Allocations Committee (FAAC)	-It determines monthly disbursement from the federation account. -It comprises of representative of the federal, 36 states government, RMAFC, Accountant General of the Federation and other revenue agencies and so on.
4	State Joint Local Government Account Allocation Committee (JAAC)	-It determines monthly disbursement from the State Joint Local Government Account. -It comprises of representatives of the State and local governments

Source (Adapted from Bashir, 2008; Ohiomu & Oluyemi, 2019)

2.2.6 Allocation to Federal Government:

According to Ujah (2021), reporting on the vanguard news paper online, it stated that the Secretary to the Government of the Federation (SGF), Mr. Boss Mustapha, gave the federal government position at a town hall meeting organized on the New Revenue Formula, in Abuja to state that

“a lot of the resources allocated to the federal government was spent on providing services that were the responsibilities of state governments”. He further noted that, “*We are all agreed, as Nigerians, that the present Revenue Allocation formula, both vertical and horizontal, is long overdue for a review not only because the last one was done in 1992 but most importantly, contemporary issues since then, such as heightened insecurity, decaying infrastructure, need for appropriately matching statutory functions and tax powers, need to be taken into consideration*”. Furthermore, the reported stated “All over the world, revenue and resource allocation has always being a function of the level of responsibilities attached to the different components or tiers of government. It is therefore important that this Current exercise rests squarely on the 1999

Constitution (as Amended)”. Discussing on the responsibility of the federal government on the use of allocation, the SGF stated that *“The Second Schedule of the Nigerian constitution contains Sixty (68) Items on the Exclusive Legislative List, and these are areas in which the Federal Government is supposed to use resources accruing to the federation to provide services and related development needs. On the other hand, the Thirty (30) items on the Concurrent requires both the Federal and State Government to address”*

It is, thus, very clear that to have an endearing vertical review of the present revenue allocation formula, there must be first agreement on the responsibilities to be carried out by all the tiers of Government. “In order to appreciate the position of the Federal Government, the way federal government utilises its own 52.68%, share includes the following (according to the SGF), Federal: Disbursement of the FGN Share of 52.68%; Consolidated Revenue Fund (CRF)48.50%; Federal Capital Territory (Like a State)1.00%; Natural Resources Development Fund (States are the beneficiaries)1.68%; Ecological Funds 1.00% (45% to NEMA, NEDC, NALDA and NAGGW, 55% addressing ecological challenges at Sun-National levels); Stabilisation Account 0.50% (25 % – 0.125 to NSIA and 75% 0.375 managed by OAGF and mostly utilized for emergency requests by States).

Similarly, within the Consolidated Revenue Fund, disbursements are made for Debt Servicing, Statutory Transfers, Salaries, Pension and Gratuities, capital supplementation amongst others (Ujah, 2021). It is, therefore, clear from the above that the Federal Government spends most of its resources on and for the state and local government levels. When you juxtapose this with the equally greater number or responsibilities on the Exclusive Legislative List, you would even want to make a case for greater allocation to the Federal Government. “Alongside the above, other considerations that informed the Federation Government’s position on the review of the present vertical revenue allocation formula included Federal Government’s increasing visibility in Sub-national level responsibilities due to weaknesses at that level e.g Primary health care, basic primary education; Increasing level of insecurity and increased remittances to State and Local Governments through the Value Added Tax sharing formula, where the Federal Government has only 15 % and the States and Local Government share 50% and 35% respectively (Ujah, 2021, November 9).

2.2.7 Allocation to State Governments:

The allocation to states are supposed to be used for development at the state levels to complement the effort of the federal government in provision of infrastructures as well other services. Tribune newspaper reported that in 2021 in month of November for example. The Federation Accounts Allocation Committee (FAAC) shared a total of N675.946 billion November 2021 federation revenue to the three tiers of government (Inokotong, 2021, December, 18). The report further stated that the N675.946 billion total distributable revenue comprised distributable statutory revenue of N488.674 billion; distributable Value Added Tax (VAT) revenue of N182.678 billion, Exchange Gain of N4.156 billion and Excess Bank Charges Recovered of N0.438 billion. In addition, from the total distributable revenue of N675.946 billion; the Federal Government received N261.441billion, the State Governments received N210. 046 billion and the Local Government Councils received N155.456 billion. The sum of N49.003 billion was shared to the relevant States as 13% derivation revenue.

The distributable statutory revenue of N488.674billion was available for the month. From this, the Federal Government received N231.863 billion, the State Governments received N117.604 billion and the Local Government Councils received N90.668 billion. The sum of N48.540 billion was shared to the relevant States as 13% derivation revenue. Similarly, From the N182.678 billion distributable Value Added Tax (VAT) revenue, the Federal Government received N27.402 billion, the State Governments received N91.339 billion and the Local Government Councils received N63.937 billion. The Federal Government received N1.946 billion from the total Exchange Gain revenue of N4.156 billion. The State Governments received N0.986 billion, the Local Government Councils received N0.761 billion and N0.463 billion was shared to the relevant States as 13% derivation revenue. The Federal Government received N0.231billion, the State Governments received N0.117billion and the Local Government Councils received N0.090 billion from the N0.438 billion Excess Bank Charges Recovered.

While huge revenue is allocated on a monthly basis to the different tiers of government, reports of mismanagement and lack of accountability abounds (Akimpelu, 2021; Olufemi, 2020; Otinche, 2018). A report from premium times news painted a gloomy picture of the situation. According to that report, Nine of Nigeria's highest-earning states from federal allocations also had the highest number of out-of-school children, as data from the nation's statistics bureau, NBS, has shown. It continued that the data is an aggregation of the monthly federal allocations to all 36 states and the FCT from 2015 to 2018 – since the out-of-school children data is as of 2018 (Akinmpelu, 2021). It stated that Nine (9) of the Nigerian states receiving the highest revenue allocations also have some of the highest numbers of out-of-school children in the country, raising concerns over accountability and prioritization.

Within the four years under review, about N7.5 trillion (excluding the FCT's allocation in 2016) was shared among the states as federal allocation, according to the NBS, with the oil-rich Akwa Ibom, Delta, Rivers, Bayelsa and Nigeria's economic hub Lagos the highest beneficiaries. In spite of receiving some of the largest slices of the federal allocations, Kano, Akwa Ibom, Ondo, Borno, Katsina, Oyo, Jigawa, Niger and Kaduna states also housed the highest number of out-of-school children in the country, raising concerns over fiscal accountability and prioritisation by the states (Akimpelu, 2021). Oil-rich Akwa Ibom in Nigeria's south earned the highest with N606 billion, yet had the second-highest number of out-of-school children. Despite getting N249.4 billion, the sixth-highest allocation within the period, the northwestern state of Kano had the highest out-of-school children.

Other top earners that could not keep their children out of the streets include Ondo, which earned N199.3 billion; Borno, N185.2 billion; Katsina, N184.2 billion; Oyo, N176.2 billion; Jigawa, N174.6 billion; Niger, N172.7 billion; Kaduna, N171.8 billion. According to the 2018 data published by the Universal Basic Education Commission, UBEC, Kano had 989,234 out-of-school children, Akwa-Ibom 581,800, Katsina 536,122, Kaduna 524,670, Oyo 418,900, Jigawa 337,861, Borno 330,389, Ondo 317,700 and Niger 292,700. On the flip side, Delta (N541.8 billion) and Bayelsa (N438.7 billion) – among the top four earners – and Edo (N180.4 billion), the tenth highest earner, also had some of the lowest out-of-school children estimates from the same year. Delta had 145,996 of the nation's out-of-school children, Edo – 140,798 and Bayelsa – 53,079. All states and the FCT made a combined revenue (FAAC and IGR) of about N11.1 trillion in four years.

The figure excludes the IGR for Ebonyi and the FCT in 2015, as well as the latter's IGR and FAAC in 2016 and its IGR in 2017. Lagos alone accounted for N1.6 trillion of the over N11 trillion all the states earned. Rivers raked in N865.5 billion; Delta N737 billion; Akwa Ibom N684.2 billion; Bayelsa N481.5 billion; Ogun N391.7 billion; Kano N380.5 billion.

Other higher earners include Edo N276.4 billion; Oyo N257.8 billion; Kaduna N256.4 billion; Ondo N253.8 billion; FCT N233.4 billion; Enugu N229.8 billion; Anambra N225.7 billion; Abia N214.5 billion. Akwa Ibom, Kano, Oyo, Ondo and Kaduna are again higher earners with high unschooled children. On the other hand, Delta, Bayelsa, Edo, the FCT, Enugu, Anambra and Abia kept their out-of-school children figure low. Meanwhile, all units of the federation, save Lagos and Ogun, are largely dependent on FAAC allocation because it dwarfs their internally generated revenue significantly. Only Lagos and Ogun States earned more from IGR than they did FAAC in those four years combined. More than half of Nigeria's 10.2 million out-of-school children live in 10 states of the country, data published in the 2018 digest of basic education statistics by the Universal Basic Education Commission (UBEC) and corroborated by the National Bureau of Statistics (NBS) in its 2020 report on women and men showed.

All 10 have a combined 5.2 million children not attending primary school. The 10.2 million estimate, more than 60 per cent of them boys, is more than a quarter of the nation's 40.8 million children of primary school age (between six and 11 years). By implication, as of 2018, for every four Nigerian children, one had no access to primary school education. Again, nine of the bottom fifteen FAAC earners from 2015 to 2018 are among the bottom fifteen states with the least out-of-school children. A total of N90.6 billion was earned as FAAC allocation by Osun State in four years, making it the least earner, yet it had 165,114 out-of-school children, the fourteenth least by all states. Again, overall Osun (N129.6 billion), Ekiti (N138 billion), Ebonyi (N149.1 billion), Gombe (N153.2 billion), Nasarawa (N160.3 billion) and Cross River (N186.3 billion) were the least earners among the lowest fifteen states with out-of-school children (Akinmpelu, 2021).

2.2.8 Allocation to Local Governments:

Revenue allocated to the local governments equally are supposed to be used to finance capital and recurrent expenditures just as it applies to other two tiers of government, however they often than not misused in the process by public officials (Otinche, 2018). National powers are shared between the three tiers of government in terms of exclusive (federal government), concurrent (federal and state government) and residual (local government councils). The power of each tier of government to generate revenue is statutorily defined in the 1999 Nigerian constitution. Each tier of government has variable capacities to initiate and implement development policies and programmes. To promote grass root development in Nigeria, the numbers of states were increased from three regions to four regions in 1963, 12 states in 1967 and progressively to 36 states and the Federal Capital Territory and 774 local government councils to alley the fear of ethnic domination and marginalization (Otinche, 2018).

In 2017 for instance between the month of August- December, 2017, the total amount of allocation to the locals governments are as follows August, 98.01bn; September, 131.04bn, October, 114.74bn, November, 110.58bn and December, 124.09bn respectively, (Otinche, 2018). There are the issues of mismanagement of the funds allocated to LGAs by the state government has this has negated the effort towards development by the local governments. According to Olufemi

(2020), the in the last 12 years, 15.5 trillion were duly transferred to states on behalf of the 774 local governments, yet there is no public information on what portion of that 15.5 trillion, each local government received. A monthly average of N139,117,586 or an annual average of 1.67 billion naira (N1,669,411,036) has accrued to each local government in Nigeria.

Local governments are a fundamental part of Nigeria's political landscape; they may understand citizens' daily lives more intricately than politicians at the state and federal level and are sometimes better equipped to respond to localized issues. Yet, public data and information about how state governments manage and disperse federal money specified for redistribution to local governments are scarce. This data could play a critical role in ensuring local government autonomy, holding state governments accountable for mismanaging funds and providing clarity around why certain local governments receive more than others. Based on analysis of the 12-year data sourced from the websites of the National Bureau of Statistics and the Office of Accountant-General of the Federation, about 15.5 trillion naira (N15,505,489,701,816) has been transferred to the 36 states and the FCT on behalf of the 774 local government councils of the country.

Broadly speaking, an average of N20 billion naira accrued to local governments in Nigeria between 2007 to 2018 with the least Council having a total of 12.8 billion and the highest Council having 56.3 billion in the same period. It should be noted that these statistics are difficult to confirm, as local government chairpersons did not confirm the amount they received from the state government and constituents cannot attest to the exact value of the services they received from their local government. The monthly LGA transfer is the statutory allocation distributed by the Federation Account Allocation Committee. While Abuja Municipal with the highest allocation has had a monthly average of 391.1 million naira (N391,103,922) or an annual average of 4.69 billion naira (N4,693,247,062), Ifedayo local government in Osun State, with the least allocation, has accrued a monthly average of 88.56 million naira (N88,560,331) or an annual average of 1.06 billion naira (1,062,723,969). The question that naturally should follow is how transparent, accountable and prudent have the state governments been with all these funds? (Olufemi, 2020).

Furthermore, nearly all the 774 local governments' executives never got the exact amount distributed to them and many times accuse their state governments of misappropriating the funds received on their behalf while also interfering in the running of the affairs at the grassroots level. This is contrary to Nigeria's legal framework; the law makes it mandatory for the state governments to allocate 10 percent of its internally-generated revenue to the local councils. An OECD report decried how state governments have taken over most local government functions in order to justify spending funds earmarked for councils in the Joint Revenue Account, and funds from the Federation Account do not reach the local level. This is largely because most resources are owned and managed by the federal government, and almost all states and local governments rely on allocations or shares from federal revenues. Two other positions as noted by Olufemi that are consistently troubled the realisation of fiscal federalism are illegal custody and disbursement of federally collected revenue and the refusal to act upon audit reports by prosecuting indicted federal officers who deal corruptly with the federations' treasury (Olufemi, 2020).

2.3 Theoretical Framework

Benefit Received Theory of Taxation. This theory dictates that the state should levy taxes on individuals according to the benefit they derived from government expenditure. The more benefits a person derives from the activities of the state, the more he should pay tax to the government. In other words, this theory proceeds on the assumption that there is basically an exchange or contractual relationship between a tax payer and the state. The benefits theory would imply that a resident should be able to collect personal tax benefits to the extent that her tax payments to the source state exceed the money value of any source state government benefits she already receives, including infrastructure, regulated labour and capital markets, and so on (Otu & Adejumo, 2013). According to Musgrave and Musgrave (1973), the benefit approach or theory was initially developed by Knut Wicksell (1896) and Erik Lindahl (1919), two economists of the Stockholm School, and has then been applied and furthered by several scholars including the likes of Richard Musgrave and Peggy Musgrave.

It is noted that Wicksell's near-unanimity formulation of the principle was premised on a just income distribution. The approach was extended in the work of Paul Samuelson, Richard Musgrave (Hansgrugen, 2000) and others (Musgrave, 1959). It has also been applied to such subjects as tax progressivity, corporation taxes, and taxes on property or wealth (Musgrave & Musgrave, 1973; 2004). As at contemporary times, the benefits received theory is found in almost all writings regarding the issues of taxation and its benefits to not just the individual but to society at large (Ordu & Nkwoji, 2021). Howitt (2007) states that economic policies that promotes trade openness and innovation will drive growth. Hence, this theory fits into this study by explaining that Value Added Tax allocation will not promote human development but the economic policies developed and implemented by states to encourage trade openness and innovation will promote the development of the state and this can be achieved through the allocated revenue they receive.

2.4 Review of Empirical Literature

Audu and Ajibade (2021) studied Value Added Tax Allocation and Human Development Among States in Nigeria. The study hinged on the endogenous growth theory. The Ex-post facto research design was used with secondary data collected in respect to all the 36 states in Nigeria which was gathered and used for the study. The multiple linear regression was used in analyzing the data in order to examine the effect of the explanatory variable on the dependent variables. The results of this study revealed that VAT allocation and internal source of finance have very low positive effect on the level of literacy of Nigerians. The result further showed that VAT allocation has a very low positive effect on the quality of life in Nigeria. The study concluded that VAT allocation have no significant effect on human development among states in Nigeria. The study recommended that state government should focus on developing economic policies that promotes the literacy level and the quality of life of their citizens.

Olofin et al. (2021) in their study investigated fiscal federalism in Nigeria: a cluster analysis of revenue allocation to states and local government areas, 1999 – 2008. The study stated that existing literature on revenue allocation in Nigeria showed more concern for merits and demerits of sharing principles and /or formulae. Several alternatives have been proposed and will continue to be developed to address the unending agitations from beneficiaries. Contrary however, their study analysed two items of revenue (statutory and VAT) shared among the states including FCT

and all the Local Government Areas (LGAs) between May 1999 and December 2008. The net statutory allocation after deductions was also analysed. Using Cluster analysis to evaluate revenue allocation in Nigeria, States and LGAs exhibiting similarity in revenue received were grouped and their common features highlighted. The result of the study showed that a small number of states constituting each of the clusters in terms of statutory allocation, VAT and net statutory allocation occupied the range of values for highest and lowest allocations. Specifically, the SE zone was found to be the least beneficiary of statutory allocation. In the case of VAT, NW zone benefited more than other zones while NC dominates the cluster of least beneficiary states. The story changed completely in the case of net statutory allocation. The oil producing states received the largest net statutory allocation even above the most industrialized state in Nigeria – Lagos simply because of the derivation fund enjoyed solely by them. Nonetheless, a good number of LGs in Nigeria have similar features in terms of both statutory allocation and VAT.

Omodero (2020) study investigated the consequences of indirect taxation on consumption in Nigeria. The study assessed both Value Added Tax (VAT) and CED to determine their effects on consumption using various econometric tools, such as trend analysis, pairwise Granger causality tests, unrestricted co-integration rank test, least squares technique, and data that cover the period from 2005 to 2019. The results indicated that VAT insignificantly but positively influences consumption, while CED has a considerable auspicious influence on use. The result showed that VAT imposition on merchandises and services is discouraging the absorption of specific foodstuffs and services and allowing the operation of informal economic activities to thrive in Nigeria. However, CED charges do not reduce the use of certain illegal products purposely taxed to discourage their consumption. The study recommended a reduction in the prices of food items and services to enable consumers to increase their patronage, while the products that attract CED but are harmful should be banned entirely. Thus, offenders should be allowed to face the wrath of the law.

Abate (2019) examined the legality of Value Added Tax administration by the Federal government in Ethiopia using a qualitative research design and revealed that Value Added Tax is within the purview of the Federal government while similar form of it is left for the State government.

Ohiomu and Oluyemi (2019) in their study examined ways of Resolving Revenue Allocation Challenges in Nigeria: Implications for Sustainable National Development. The study examined the structure and formula for revenue allocation in Nigeria which has been fraught with challenges, proffers solution, and highlights its implications for sustainable national development. The work used the methodology of Group Unit Root Test, auto regressive distributed lag (ARDL) Bounds Testing and Cointegrating Long Run tests for robust policy recommendations. Time series data from several issues of CBN Statistical Bulletin were collated for the study covering the period 1984-2016. Using the Gross Domestic Product as the dependent variable and revenue allocation to the three levels of government, and oil revenue as the independent variables, the results from the study showed that revenue allocations and the other variables have significant relationship with economic growth in Nigeria. The study recommended among others that the current revenue allocation formula should be reviewed to embrace autonomy in its entirety to achieve national goals and objectives. Various levels of government should be adequately funded to enable it carry out its expenditure responsibilities to accelerate grass root development.

Owino (2019) appraised the effect of VAT on economic growth of Kenya from 1973 to 2010 using the ordinary least squares technique. The results revealed the existence of a positive but insignificant relationship between VAT revenue and Kenya's GDP. The finding implied that VAT revenue in Kenya was not sufficient to influence economic growth.

Ikeokwu and Micah (2019) examined the influence of indirect taxes on the economic growth of Nigeria using data that covered the period from 2000 to 2016. The study found evidence that both CED and VAT exerted a significant positive influence on PCI and GDP used as a proxy for economic growth.

Alavuotunki et al. (2018) examined the effect of Value Added Tax on income inequality and consumption inequality among selected countries using the Ex post facto research design. The study show that Value Added Tax does not have a positive effect on income inequality while it does not have any effect on consumption inequality.

Abomaye, et al. (2018) in their study analysed the contribution of petroleum profit tax (PPT), company income tax (CIT), and customs and excise duties (CED) to Nigeria's economic growth using the Ordinary Least Squares method and data covering the period from 1980 to 2015. The result of the study revealed that PPT, CIT, and CED contributions were insignificant in affecting economic growth in Nigeria

Oraka et al. (2017) investigated the effect of value added tax on the Nigerian economy from 2003 to 2015 using a simple regression analysis. The study found evidence that VAT has a negative relationship with per capita income, while a positive relationship existed between VAT and the government total revenue.

Onoalopo and Fasina (2013) did an investigation of the effect of vat on revenue profiles of south-western Nigeria. The study examined the effect of Value Added Tax (VAT) on the income profiles of State Government in South-Western Nigeria. The choice of South West Nigeria was based on its being a non-oil producing state except Ondo state. Secondary data from the approved budgets of five out of the six states that made up South Western Nigeria were used for the study. Osun state was excluded because it shares the same characteristics with Ekiti State. Panel regression method was employed since the sample contains data across States and for the periods 2002 to 2011. Fixed effect (FE) , Random effect (RE) and Hausman-test based on the difference in fixed and random effect estimators were conducted. The study concluded that the panel estimates indicate that Random effect is best fit . From the random effect estimates, VAT is positive and significantly ($\beta=0.7318 < .05$) related to revenue profile of States. It is recommended that Governments, policy makers should concentrate efforts at ensuring that more VAT is generated by developing strategies of poverty alleviation as VAT is a consumption tax which is a function of real income in the hands of the people. Increased consumption will increase the revenue input from the state into VAT component of the federation account.

3.0 METHODOLOGY

This study employed the ex-post facto research design. Ex post facto research design is basically concerned with how to perform impact analysis on already existing data. It is relevant for this study since it was used to find out if one or more already existing conditions could have possibly caused subsequent differences in groups of subjects. The study's target population was the entire

three arms of government (federal state and local governments) and the periods that allocations have been shared among the three tiers of government starting from 1960 when Nigeria gained independence till date (1960-2022) (62 years' period). However, using judgmental sampling technique, a sample of 21 years' period (2000-2020) based on the amended constitution which took place in 1999 and subsequently the provisions of revenue allocation was affected and it reflected in 2000 revenues shared by the three tiers of government. Secondary sources of data were used for the study. The data collected from the secondary source were extracted from CBN annual Statistical Bulletin 2020 . The variables were that of Value added tax revenue (VAT), Federal allocation, state and local government allocations shared from the federation account (table 3.1). For the period of 2000-2020. Correlation as well as regression analysis were used for data analysis and testing of hypotheses

3.1 Model Specification

In line with the hypotheses earlier stated in at introduction, regression models were formulated as shown in the following implicit equations:

$$RAL = f(VAT) \quad (1)$$

$$FAL = f(VAT) \quad (2)$$

$$SAL = f(VAT) \quad (3)$$

$$LAL = f(VAT) \quad (4)$$

Where;

RAL = Revenue Allocation

SAL = State Allocations

LAL = Local government Allocations

VAT = Value Added Tax Revenue

f = functional notation

The ordinary least square for the above models is stated thus:

$$VAT_{it} = \beta_{0i} + \beta_1 FAL_{it} + \epsilon_{it} \quad (4)$$

$$VAT_{it} = \beta_{0i} + \beta_1 SAL_{it} + \epsilon_{it} \quad (5)$$

$$VAT_{it} = \beta_{0i} + \beta_1 LAL_{it} + \epsilon_{it} \quad (6)$$

Where;

β_0 = Unknown constant to be estimated

β_1 - = Unknown coefficients to be estimated

i = observations

t = time

ε = Stochastic error term that captures variables not included and expected to be identically distributed with zero mean and constant variance.

$\beta_0, \beta_1, \geq 0$

Using Statistical Package for Social Sciences (SPSS) software, the variables were subjected to complementary statistical test and the results will be used for analysis and for hypothesis verification.

Table 3.1: Table of variables for the study

S/NO	Year	VAT('B)	FAL(N'B)	SAL(N'B)	LAL(N'B)
1	2000	58.5	503.3	246.6	207.1
2	2001	91.8	723.92	404.61	324.23
3	2002	108.6	842.51	442.06	360.23
4	2003	136.4	948.41	489.16	396.8
5	2004	159.5	1180.81	666.44	507.87
6	2005	178.1	1456.96	815.18	622.1
7	2006	221.6	1739.93	976.26	744.81
8	2007	289.6	1869.19	1070.86	815.32
9	2008	401.7	2655.45	1511.51	1151.53
10	2009	481.4	2151.1	1387.78	992.28
11	2010	564.89	2416.51	1538.65	1252.42
12	2011	659.15	3237.04	1921.61	1459.35
13	2012	710.56	3451.76	2084.69	1583.01
14	2013	802.69	3711.75	2251.34	1708.58
15	2014	802.96	3404.45	2062.63	1563.15
16	2015	635.35	2600.98	1597.64	1205.19
17	2016	828.2	2081.41	1347.23	1011.04
18	2017	972.35	2564.04	1681.47	1263.39
19	2018	1108.04	3483.89	2210.73	1667.25
20	2019	1188.581	3344.56	2174.97	1636.76
21	2020	1,628.35	3010.57	2108.32	1576.78

Source (Computed from CBN Annual Statistical Bulletin, 2020)

4.0 RESULTS AND ANALYSIS

Descriptive analysis

For effective analysis of the data collected for this study, the descriptive statistics was applied to appraise the structure or nature of the data so collected. Presented in table 4.1 below is the result of the descriptive statistics of the data as generated by the SPSS version 21

Table 4.1 Descriptive Result of variables of study

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
VAT	21	58.5000	1628.3500	12028.3210	572.777190	424.8838324
FAL	21	503.3000	3711.7500	47378.5400	2256.120952	1021.5333865
SAL	21	246.6000	2251.3400	28989.7400	1380.463810	672.5177941
LAL	21	207.1000	1708.5800	22049.1900	1049.961429	502.1028234
Valid N (listwise)	21					

Source (SPSS OUTPUT of Data, 2022).

Table 4.1 above shows the result of the descriptive analysis of the data used in this study. It shows that listed allocation to federal government called FAL, averaged N2256 billion with a standard deviation of N1021.53b ranging from N505 billion as minimum to N3711.8billion as maximum values. There is a great variability amongst the three tiers of government in terms of their allocations as indicated by the minimum and maximum statistics. State allocations hereafter referred to as SAL, has its mean value as N1380.46 billion, a standard deviation of N672.52 billion with a range from N246.60 billion as minimum to N2251.30 billion as maximum. Allocation to local governments, hereafter referred to as LAL showed a mean value of N1049.96billion, a standard deviation of N502.10 billion and ranges between a minimum of N 207.10billion, and maximum value of N1708.58 In all the total sum of VAT for the 21-year period (Sum) amounts to N12028.32 billion, FAL N47378.54 billion, SAL N28989.74 billion and LAL N22049.19 billion respectively

Analysis of Multi-Collinearity and Normality of Residuals

Table 4.2 Test of Multi-Collinearity

Coefficients^a

Model	Collinearity Statistics		
	Tolerance	VIF	
1	FAL	.015	6.5948
	SAL	.002	4.19224
	LAL	.002	4.26669

a. Dependent Variable: VAT

Source: SPSS Output of Data

Table 4.1 revealed a highest VIF value of 6.5948 that is less than 10, tolerance value is less than 1. This means that the independent variables used in this study do not suggest multicollinearity problem.

Table 4.2. Checking Normality of data

Descriptive Statistics

	N	Sum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
LVAT	21	125.9973	5.999872	.9513853	-.540	.501	-.862	.972
LFAL	21	159.3140	7.586379	.5842286	-.976	.501	-.024	.972
LSAL	21	148.3584	7.064687	.6569437	-1.011	.501	-.002	.972
LLAL	21	142.8345	6.801642	.6298022	-.954	.501	-.144	.972
Valid N (listwise)	21							

Source: Output from SPSS version 21

Decision: Normality assumption not violated using skewness and Kurtosis values

Table 4.3 Table of Correlation Matrix

		VAT	FAL	SAL	LAL
VAT	Pearson Correlation	1	.798**	.862**	.856**
	Sig. (2-tailed)		.000	.000	.000
	N	21	21	21	21
FAL	Pearson Correlation	.798**	1	.992**	.992**
	Sig. (2-tailed)	.000		.000	.000
	N	21	21	21	21
SAL	Pearson Correlation	.862**	.992**	1	.999**
	Sig. (2-tailed)	.000	.000		.000
	N	21	21	21	21
LAL	Pearson Correlation	.856**	.992**	.999**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	21	21	21	21

** . Correlation is significant at the 0.01 level (2-tailed).

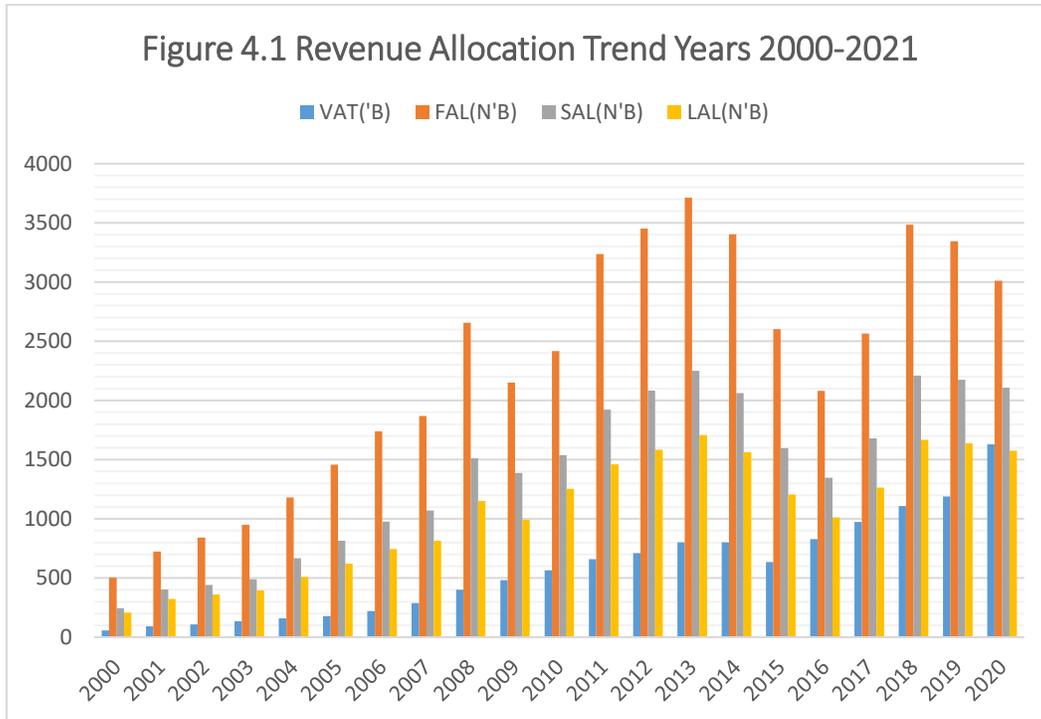
Source (SPSS OUTPUT, 2022).

All variables have high and positive correlations amongst each order.

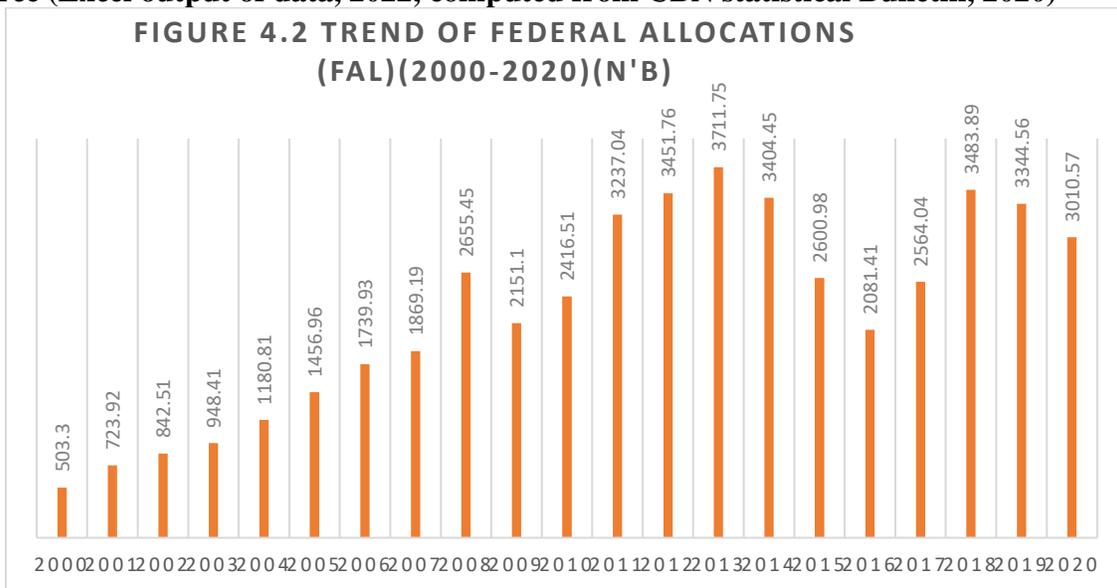
Trend Analysis

Within the last twenty-one years period under review, Allocated revenue to the tiers of government has broadly maintained an upward trend within a thirteen-year period before falling (Figure 4.1). Federal allocation for example increased from N503 billion in 2000 to as high as N3.7 trillion in year 2013 and 2014, after wards it began to drop in years 2015 and to as low as N2,081 trillion in 2016 (figure 4.1). Whilst it recovered from the falling trend to an upward movement in subsequent years of 2017 and 2018, it has continued with downward trend in recent years 2019 and 2020. This implying that there is need to boost the funds accruable to the federation account and perhaps looking for alternative sources of funding needed for development by the federal government. Similar situation applies to VAT. While it has experience an upward trend, however the increase is a modest one with VAT revenue increasing from approximately N59 billion, N92 billion, and N109 Billion in years 2000, 2001 and 2002 respectively to as high as over N802 billion in 2014 (figure 4.3). It dropped marginally in 2015 however, it quickly rebounded in year 2016 and has continued with upward movement in recent years with VAT revenue increasing to over N1.6 trillion in year 2020. The implication of this is that VAT revenue is a reliable source of funding

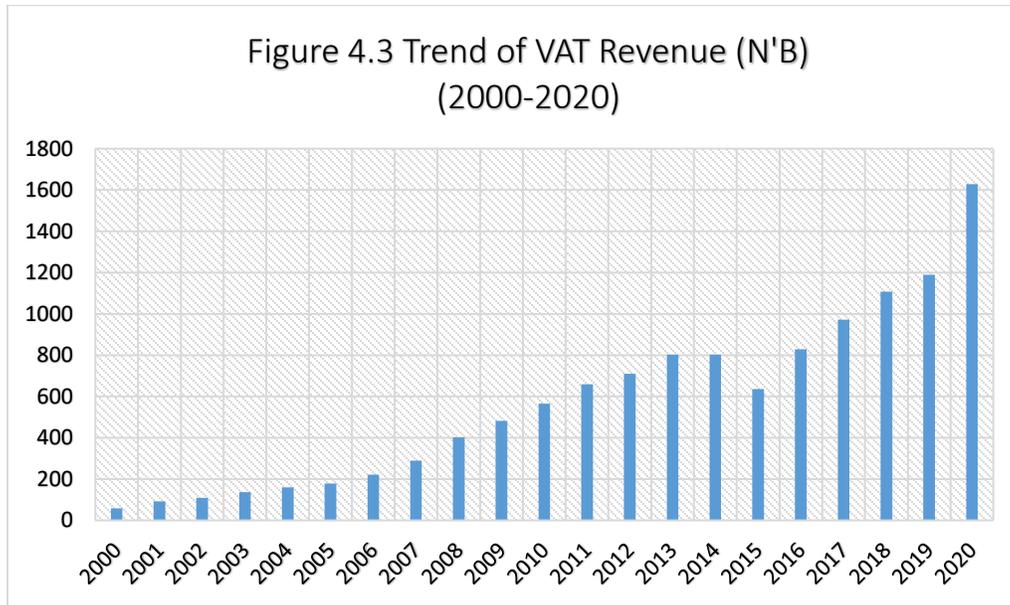
the federation account as such equitable way of distribution needs to be actualised, so that the three tiers of government would have the needed funds for its activities as enshrined in the constitution.



Source (Excel output of data, 2022, computed from CBN statistical Bulletin, 2020)

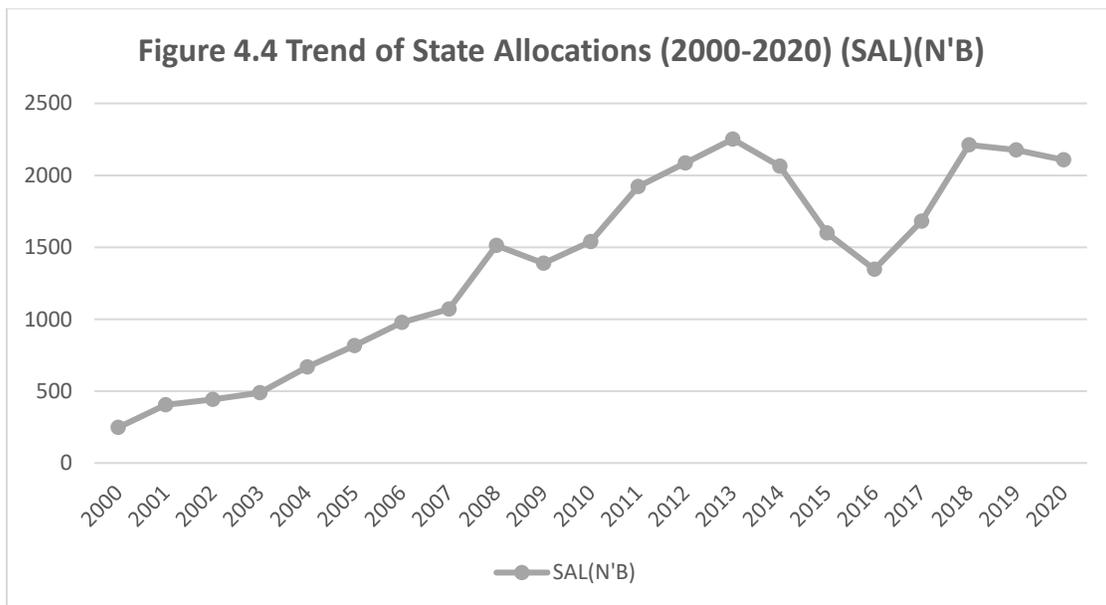


Source (Excel output of data, 2022)

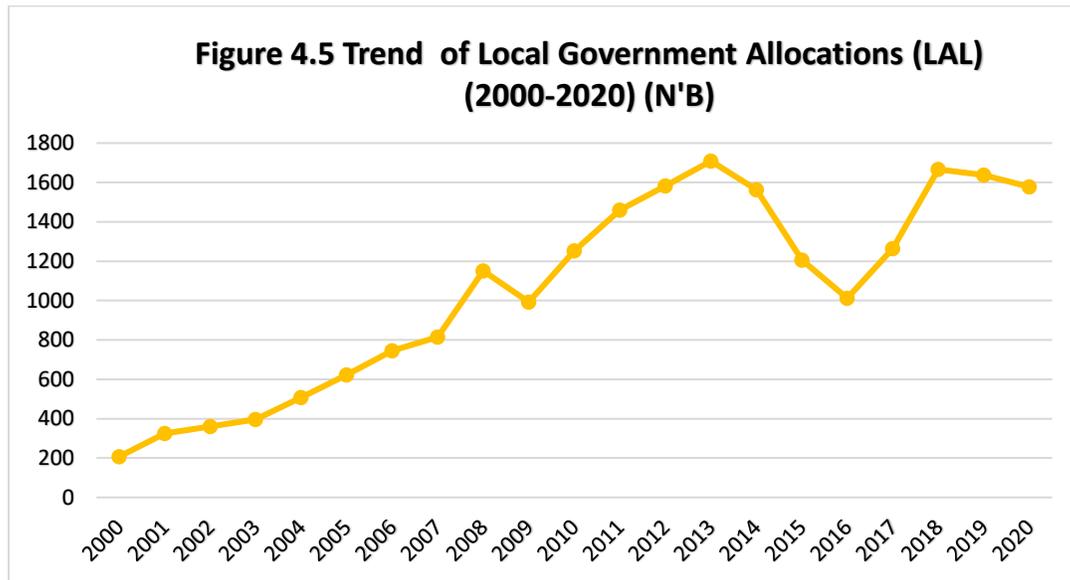


Source (Excel output of data, 2022)

Looking at the trend of allocation to states and local governments, their allocations have witnessed a cyclical movement, rising from 2000 to 2007 and falling sharply in 2008 before rising again. It witnessed its biggest fall in year 2016 where the allocations to the state fell as low as N1.3 trillion and N1.0 trillion for states and local governments respectively. However, there is good news as in recent times the allocations to state and local governments have been rising, perhaps the reason for increased calls for resource controls including the issue of VAT and the need for more allocation from the federation account to the states and LGAs (see figure 4.4 and 4.5).



Source (Excel output of data, 2022)



Source (Excel output of data, 2022)

4.1 Bivariate Analysis and Test of Hypotheses

Test of Hypothesis 1

HO₁: There is no significant relationship between VAT Revenue and Allocation to Federal Government in Nigeria.

Table 4.4 Regression result for Hypothesis one

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.938 ^a	.881	.874	.207111147	.881	140.143	1	19	.000

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.129	.296		13.971	.000
	LVAT	.576	.049	.938	11.838	.000

a. Dependent Variable: LFAL

Source (SPSS Output of data, 2022)

From table 4.4 above, the result of the data regressed on VAT shows a positive and significant relationship with Federal allocation in Nigeria (p-value= 0.000). It means that a 1% increase in VAT will bring about a 0.938% increase in Federal Allocations all other variables are held constant. Since the p-value of the independent variable is less than 0.05, we therefore reject the null hypothesis and therefore concluded that there is significant relationship between VAT and federal allocation in Nigeria.

Test of Hypothesis 2

HO₂: There is no significant relationship between VAT Revenue and Allocation to State Governments in Nigeria.

Table 4.5 Regression result for hypothesis two

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.959 ^a	.919	.915	.191347810	.919	216.743	1	19	.000

a. Predictors: (Constant), LVAT

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.092	.273		11.325	.000
	LVAT	.662	.045	.959	14.722	.000

a. Dependent Variable: LSAL

Source (SPSS Output of data, 2022)

From table 4.5 above, the result of the data regressed on VAT and State Allocations shows a positive and significant relationship with state allocations in Nigeria (p-value= 0.000). It means that a 1% increase in VAT will bring about a .959% increase in State Allocations all other variables are held constant. Since the p-value of the independent variable is less than 0.05, we therefore reject the null hypothesis and therefore concluded that “There is a significant relationship between VAT and state allocations in Nigeria.

Test of Hypothesis 3

HO₃: There is no significant relationship between VAT Revenue and Allocation to State governments in Nigeria.

Table 4.6 Regression result for hypothesis three

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.959 ^a	.919	.915	.183787220	.919	215.859	1	19	.000

a. Predictors: (Constant), LVAT

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.994	.262		11.416	.000
	LVAT	.635	.043	.959	14.692	.000

a. Dependent Variable: LLAL

Source (SPSS Output of data, 2022)

From table 4.6 above, the result of the data regressed on VAT and Local government allocations shows a positive and significant relationship VAT on Local government allocations in Nigeria (p-value= 0.000). It means that a 1% increase in VAT will as well bring about a .959% increase in State allocations all other variables are held constant. Since the p-value of the independent variable is less than 0.05, we therefore reject the null hypothesis and therefore conclude that there is significant relationship between VAT and Local government allocations in Nigeria.

4.2 Discussion of Findings

Relationship between VAT and Federal Allocations in Nigeria

The study evaluated the relationship between VAT and Federal Allocations in Nigeria. Findings show a positive and significant relationship between VAT and federal allocations in Nigeria (p-value= 0.000). It means that a 1% increase in VAT will bring about a 0.938% increase in Federal Allocations all other variables are held constant. In addition with R squared value of .881 (88.1%) show that 88.1% of the variation of the Revenue allocation in terms of Allocation to Federal government is accounted for by VAT revenue. The findings here is in agreement with the study

of Ujah (2021), Ohiomu and Oluyemi (2019), Onoalapo and Fasina (2013) whose study findings revealed that VAT pool significantly affects the revenue allocation to the three tier of government

Relationship between VAT and State allocations in Nigeria.

In this case, similar situation as VAT and federal applies. There is a positive and significant relationship between VAT and Allocation to States in Nigeria (p-value= 0.000). It means that a 1% increase in VAT will bring about a .959% increase in State Allocations all other variables are held constant. In addition, with R square value of 0.919 means 92% of the variation of Revenue allocation in terms of allocation to states is accounted for by VAT revenue. The findings here aggress with that of Olofin et al. (2021), Akimpelu (2021) as well as that of Onoalapo and Fasina (2013). Result here however disagrees with that of Audu and Ajibade (2021) whose study result revealed that VAT has insignificant effect on state revenue allocated that is needed for economic development in Nigeria

Relationship between VAT and Allocation to Local governments in Nigeria.

Again, there is a positive and significant relationship between VAT and Local allocations in Nigeria (p-value= 0.000). It means that a 1% increase in VAT will as well bring about a .959% increase in State allocations all other variables are held constant. In addition, with R squared value of 0.919 means 92% of the variation of Revenue allocation in terms of allocation to states is accounted for by VAT revenue, while on adjusted basis, the Local government allocations is 91.5% relative to the VAT Revenue. Study result here also agrees with that of Otinche (2018), Olufemi (2020) and Olofin et al. (2021).

5.0 CONCLUSIONS AND RECOMMENDATIONS

The study evaluated the relationship between VAT and Revenue allocation in Nigeria within the last 21 years. Based on the findings made, it is concluded that VAT revenue has a positive and significant relationship with Federal allocations, State allocations as well as with Local government allocations in Nigeria, thus the inevitability of using the VAT revenue pool for inclusion in revenue accruing to federation Account in Nigeria. The study thus recommended that:

- i) Federal government should not be left out in the sharing of VAT revenue as clamoured by some quarters where there is agitation for resource control especially the issue of VAT administration and collection. This is important as VAT share is significant factor for federal government funding for its own exclusive list of development activities.
- ii) There should be improved and agreed equitable sharing formula that will ensure that the States and Local governments get more share of the allocation especially as it concerns sharing of the VAT revenue. This is important as the allocations are needed for carrying out their own developmental activities at the states and local levels.
- iii) The Local governments should not be starved of the allocated funds by the states, especially as it concerns their share of VAT and other state allocations. This is important as result has indicated that VAT revenue affects local government allocations and the allocations where withheld affects the delivery of services at the local level

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THROUGHPUT ACCOUNTING IMPACT ON PERFORMANCE, EVALUATION - AN APPLIED STUDY AT INTEGRATED COACH FACTORY

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ABSTRACT

Changes in technology, level of competition, new business processes, uncertainties and risk in business environment birthed new methods of costing like throughput accounting (TA) for decision making. The goal of this study is to test for the impact of the use of Throughput management accounting method and to determine the usefulness of this method in providing management with the essential information for performance evaluation and accountability. TA is a cost accounting and management accounting technique that enables management to evaluate performance. The Integrated Coach Factory being a sub division in the ministry of railway was subjected to the research as one of India's industrial sector companies. Most Nigerian companies checked (Nigerian breweries, flour mill and Nestle) do not use TA method. The study followed a scientific methodology that incorporated both theory and practice. The study discovered a number of findings, the most significant of which is that the company did not make optimal use of available resources. This is due to a flaw in the implementation of plans and policies; because typical systems designed to operate efficiently result in a large amount of inventory, this has a negative effect on the business. It was concluded that throughput accounting is primarily concerned with sales as the sole source of (profit), as well as providing accurate and critical information about the most profitable product mix by rearranging coaches according to the completion rate for each minute the product consumes the limited resource during the manufacturing stages.

Keywords: *Constraint Theory, Performance Evaluation, Throughput Accounting, Traditional Income Statement.*

1. INTRODUCTION

Changes in the contemporary business environment which came as a result of many issues like globalization in the markets, new business processes, change in technology etch e-tare has necessitated the need for new accounting methods in business organizations as these changes requires taking measures and steps to appropriate these changes in order to remain in the competition market. For an organization to remain in business in the competitive environment there is need to manage the resources of the organization very well so that the customers will be maintained and the organizational goal and profitability is achieved.

With competition at an all-time high across organizations and corporations of diverse businesses, effectiveness and top-notch productivity has necessarily left behind the traditional and standard methods of accounting as it concerns performance evaluation and accountability. To utilize every bit of resources and harvest the greatest possible profit, organizations must make sure that they are up to date with current happenings in business (such as operations, distribution, marketing and so

on) which will ensure relevant current decisions that will affect business now and in the future. This is where Throughput Accounting becomes indispensable. Throughput Accounting, introduced by Eliyahu M. Goldratt in 1984, is a modern technique of management accounting which presents an alternative to conventional forms of accounting. Its main goal is to identify and take care of the limitations and constraints that can delay production and related processes, and thus lead to a delay in sales. Importantly, it takes time factor into account and helps to minimize any time loss that can cause a delay in revenue generation. Throughput accounting is a new management accounting approach that provides managers with support in decision making aimed at increasing a company's profitability (Egbunike, 2019). The aim of the use of throughput accounting is to achieve goal and increase profitability.

Despite advancements in science and technology throughout the years, the greatest challenge to humanity on our planet has always been challenges emerging from risk and uncertainty that result in material and financial losses (Ebere et al 2016). Businesses had no option but to alter their manufacturing processes and stay flexible in order to preserve profitability and sustainability when consumer and market needs changed (Lei & Li, 2017). As a result, it's critical to look for new ideas and ways for managing spending and providing data for performance evaluation. In management accounting, TA is a relatively recent concept. It is a method for identifying obstacles that prevent an organization from achieving its objectives and then focusing on basic measurements that drive behaviour in key areas toward achieving organizational objectives.

Throughput Accounting is a modern technique that has took shape to meet management's specifications for implementing continuous improvement concepts, as it provides needed insight into the development of operational performance by focusing on bottleneck areas and reducing completion times, as well as attempting to link throughput and operational resources expended. Intuitively we all know that generating greater revenues via sales need to be the principal focus of agencies in profit maximization. In line of this, emphasis has shifted in recent instances from cost-based accounting models such as managerial costing to a revenue-based accounting system recognized as throughput Accounting. Throughput Accounting is a vital development in present day accounting that approves managers to apprehend the contribution of restrained sources to the common profitability of the commercial enterprise(Bragg, 2007).

Throughput accounting view is that output should be confined to the extent of customers' demand and focal point of recreation need to be to locate approaches of raising customers' demand to a higher level. Any accounting system that does no longer take into account these constraints can't exact painting the functioning of an organization. This would possibly lead to administration taking wrong choices of product pricing. Make or purchase decision, discontinuance of a product or division and a host of different key managerial problems thereby affecting managerial effectiveness. It is in opposition to this backdrop that this learns about tends to check out the extent to which throughput accounting enhances fantastic managerial choices in commercial enterprise organizations. Perhaps the idea of throughput accountability with its recent applications has contributed extensively through offering a facts gadget in assisting financial gadgets when confronting tough stipulations and problems. This thinking has a modern understanding about the price structure with the aid of focusing directly on the cost of materials solely as variable costs while all different costs are fixed, and this is what made them gorgeous to the cutting-edge

manufacturing surroundings and that is due to the low contribution of the human element to the dependence of this environment on computerized work. In addition, throughout accounting in phrases of records is beneficial for supporting the administration in planning profitability through choosing it for the foremost combine that achieves its easiest profitability. To reap the above objective, the following proposition was once made by means of the researchers. H: throughput accounting notably enhance high quality managerial selections in enterprise business enterprise.

2. LITERATURE REVIEW AND THEORETICAL FRAMEWPORK

2.1 Concept of Throughput Accounting

The concept of throughout accountability with its recent applications has contributed significantly through providing an information system in assisting economic units when confronting difficult conditions and problems. This concept has presented a modern perception about the cost structure by focusing directly on the cost of materials only as variable costs while all other costs are fixed, and this is what made them appropriate to the modern manufacturing environment and that is due to the low contribution of the human element to the dependence of this environment on automated work. In addition, throughout accounting in terms of information is useful for assisting the administration in planning profitability by selecting it for the optimal mix that achieves its highest profitability. Throughput Accounting emerged as a result of the development of the Theory of constraint by Goldratt.

When cost accounting was developed in the 1890s, labour was the largest fraction of product cost and could be considered a variable cost. Workers often did not know how many hours they would work in a week when they reported on Monday morning because time-keeping systems were rudimentary. Cost accountants therefore, concentrated on how efficiently managers used labour since it was their most important variable source. Now however, workers who come to work on Monday morning almost always work 40hours or more, their cost is fixed rather than variable. However, today many managers are still evaluated on their labour efficiencies and many “downsizing” “rightsizing” and other labour reduction campaigns are based on them. Goldratt argues that under current conditions, labour efficiencies lead to decisions that harm rather than help organizations. Throughput accounting therefore removes standard cost accounting’s reliance on efficiencies in general and labour efficiency in particular from management practice. Many cost and financial accountants agree with Godlrott’s critique, but they have not agreed on a replacement of their own and there is enormous inertia in the installed base of the people trained to work with existing practices.

Throughput Accounting also pays particular attention to the concept of 'bottleneck' (referred to as constraint in the Theory of Constraints)in the manufacturing or servicing processes. The aim of throughput accounting is to identify bottleneck resources and remove them or, if this is not possible, ensure that they are fully utilized at all times. Non-bottleneck resources should be scheduled and operated based on constraints within the system, and should not be used to produce more than what the bottleneck resources can absorb. It is therefore advocated that non-bottleneck resources should not be utilized to hundred percent of their capacity, since this would merely result in an increase in inventory. This, idle time in non-bottleneck areas is not considered detrimental to the efficiency of the organization If it were utilized, it would result in increased inventory without

a corresponding increase in throughput for the system (Drury, 2008). Goldratt and Cox (1992) advocated that organizations that wish to achieve their objective should test proposed managerial decisions against three measures:

- (i) How much money is coming in' (Throughput)
- (ii) How much money is held in inventory,) (Investment)
- (iii) How much money is going out (Operating expenses)

A feasible decision is that one which increases throughput while simultaneously reducing inventory and operating expenses. However, the scope for reducing the latter is limited since they must be maintained at some minimum level of production to take place at all. In other words, operating expenses are assumed to be fixed. But management has the tendency to create more inventory than the firm's requirement so as to improve their reported profit because increase in closing inventory increase gross profit. Throughput accounting uses the minimalist approach of only assigning to the value of inventory, the cost of materials consumed in its production on the ground that raw material is the only totally variable cost involved. This approach therefore results in complete elimination of any incentive-for managers to produce excess quantities for inventory because they can no longer improve their financial results by storing operating expenses in inventory.

2.2 Application of throughput Accounting system

The application of throughput accounting depends on different concepts. Lucey (2003) identified three basic theorems for the application of throughput accounting:

Theorem 1:

With the exception of material cost in the short-run, most factory costs (including direct labour) are fixed. These fixed Costs can be grouped together as total Factory Costs (TFC), thus:
Throughput = Sales –total variable cost, Net profit= Throughput –total factory cost.

Theorem 2:

With Just-In-Time System, products should not be made unless there is a ready market for them because the ideal inventory is zero. The effect of this is that there will be unavoidable idle capacity in some operations, except for the operation that is the bottleneck of the moment working on output just to increase Work-In- Progress (WIP) on finished goods stocks create no profit and so would not be encouraged. If the resource cannot be exploited fully because of the bottleneck's limited capacity then letting it stand idle when it has completed the work required, costs nothing. This means that profit is inversely proportional to the level of inventory in the system. This can be expressed thus;

$$\text{Profit} = F(1/\text{MRT})$$

MRT Where MRT = Manufacturing Response Time.

Theorem 3:

Profitability is determined by how quickly goods can be produced to satisfy customer's orders. Producing for stock does not create profits. Improving the throughput of bottleneck operations will increase the rate at which customer demand can be met and will thus improve profitability. Contribution in its traditional form (sales -variable costs) is not a good guide to profitability

because capacity factors and the rate of production are ignored. Using throughput accounting, Product returns should be measured thus;

- (i) Return per factor hour (sales -material cost) :-Time on key resource
- (ii) Cost per factory hour, Total factory cost/Total time available on key resource
- (iii) Throughput accounting ratio = return per factory hour/cost per factory hour. The throughput accounting ratio must be greater than I for effective decision

3. RESEARCH METHODS

An overview of integrated coach factory

The integral coach factory (ICF) was inaugurated by the first prime minister of India pt. Jawaharlal Nehru on 2nd October 1955. Later, the furnishing division was inaugurated on 2nd October, 1962 and the production of fully furnished coaches steadily increased over the years. Spread over nearly 511 acres, it has about 10,000 employees to turnout more than 3500 coaches every year which includes conventional and distributed power rolling stock (DPRS). ICF is capable of manufacturing various types and variants simultaneously. It has produced 59,635 coaches' since its inception in 500 plus variant. ICF excelled not only in production of coaches in other aspects also by feathering various certificates, awards like platinum rated green building, platinum rated green school, Green Co Gold for best industrial practices and maintaining green environment.

Throughput accounting in practice at the Integral Coach Factory

The use of this concept's fundamental assumptions is necessary for determining the cost structure of products, as well as the time required to complete each product in the stages through which it goes, in order to apply the processes of accounting for achievement. These assumptions will be monitored throughout the cost structure, constraint determination, and time management processes as follows:

To begin, the cost structure of the products is determined using throughput accounting:

1. **Variable costs:** Because they are the only variable element, it is the only costs under the usage of Throughput accounting.
2. **Operating expenses:** These are fixed expenditures that are allocated to the period in which they were incurred regardless of production volume. Indirect materials, direct and indirect salaries, and indirect industrial costs are also included.

Second: determining production costs based on Royal coach company records as follows:

According to statistics derived from the integral coach factory Division, total production expenses in the Royal coach company were 81,964,998,973.32 ID in Table 1:

THE COST OF INTEGRATED ROYAL FACTORY 2018		
Serial no	Details	Cost (ID)
1	Raw material(variable cost)	80,055,766,187.00
2	Operating cost	1,909,232,786.32
3	Total cost	81,964,998,973.32

2- **For each product**, the production quantities, sales, and selling prices for the year 2018 were computed as given in Table 2.

THE AMOUNT OF PRODUCTION AND FREIGHT(INCIDENTIAL CHARGES)			
Serial no	Type of coaches	Number of coach	Freight charges
			(crore)
1	AC EMU series	708	-243,311.28
2	MEMU	72	-5,980.32
3	TRAIN 18	16	-784,768.00
4	KM	16	-339.20
5	DMU	105	-1,180.20
6	SPART	21	-129.36
7	LHB COACHES	2222	-272,195.00
8	SPIC & OTHERS	63	-141,174.16
9	EXPORT	39	-14,174.16
TOTAL		3262	-1,463,251.68

NOTE: Freight charge is computed from the factory report used for this research

3- **Calculating the cost of production of each coach under each type:** In this phase, the entire cost of raw materials, production costs, and administrative services costs are already lumped together, which it will be used to calculate the cost of producing a coach under each type, as shown in the Table 3 below:

DISPLAYS THE COST OF PRODUCING A COACH

Serial no	Coaches types	No of coaches	Raw material per coach	Administrative cost per coach	Cost per coach	Total cost
1	AC EMU series	708	22,677.52	5,669.38	28,346.90	20,069,606.00
2	MEMU	72	24,252.95	6,063.23	30,316.19	2,182,766.00
3	TRAIN 18	16	49,465.60	12,366.40	61,832.00	989,312.00
4	KM	16	42,360.00	10,590.00	52,950.00	847,200.00
5	DMU	105	21,331.80	5,332.92	26,664.76	2,799,800.00
6	SPART	21	30,080.00	7,520.00	37,600.00	789,600.00
7	LHB COACHES	2222	10,500.97	2,625.24	13,126.22	29,166,480.60
8	SPIC&OTHERS	63	185,184.00	46,296.00	231,480.00	14,583,240.30
9	EXPORT	39	99,714.48	24,928.62	124,643.10	4,861,081.10

Note: values for total cost and number of coached produced is computed from integrated coach factory 2018/2019 report, the cost of raw material and administrative is derived by dividing the cost of producing a cost of coach in the ratio of the two cost as available in the manufacturing account.

4- **Preparing the traditional income statement for each product:** For the year 2018/2019, the income statement will be prepared using the traditional method used in the company on the basis of products for research purposes, whereas the income statement in the integrated coach factory is prepared on the basis of total sales, so it will be calculated using the amount of sales and selling prices as well as the cost of one coach of total costs Production and administrative service, as shown in Table 4 below:

THE TRADITIONAL INCOME STATEMENT FOR EACH COACH BASE ON INTEGRATED ROYAL FACTORY					
Serial no	Product	Sales Revenue	Production cost	Margin profit	Administrative service cost
1	AC EMU series	172,264,386.24	16,055,684.80	156,208,701.44	4,013,921.20
2	MEMU	430,583.04	1,746,212.80	-1,315,629.76	436,553.20
3	TRAIN 18	12,556,288.00	791,449.60	11,764,838.40	197,862.40
4	KM	5,427.20	677,760.00	-672,332.80	169,440.00
5	DMU	123,921.00	2,239,840.00	-2,115,919.00	559,960.00
6	SPART	2,716.56	631,680.00	-628,963.44	157,920.00
7	LHB COACHES	604,817,290.00	23,333,184.48	581,484,105.52	5,833,296.12
8	SPIC & OTHERS	8,956,972.08	11,666,592.24	-2,709,620.16	2,918,648.06
9	EXPORT	552,792.24	3,888,864.88	-3,336,072.64	972,216.22
TOTAL		799,710,376.36	61,031,268.80	738,679,107.56	15,259,817.20

NOTE:

Sales revenue = sales quantity (table 2) * Sales Price

Production Cost = Sales Quantity * Total of production cost

= Sales Quantity * Admin. cost + Production Cost

Margin Profit = Sales Revenue - Production Cost

Admin. Cost = Sales quantity (Table 2) * Admin. Cost for 1m3

Net Profit = Margin Profit – Admin. Cost

Constraints Determining

The time it takes for each product in the production Process to reach the stage where it becomes fully manufactured, which can be identified in the next step of the application of the Throughput accounting, is used to determine the production process's obstacles.

Time Management

The research findings were chosen based on the daily transfer, so the available time is 1440 minutes per day, measured by 24 hours x 60 minutes, when the shift system is divided into three groups of workers divided on one day at a rate of (8 hours) for each worker. The coach pass through numerous stages which includes bogie frame, bogie bolster, centre pivot pin, wheel set assembly, roller bearing assembly, brake beam assembly, brake head, brake block brake lever, brake cylinder, primary suspension, dashpot arrangement, spring seating, buffer height adjustment, secondary suspension. As a result of the unstructured interview with the engineers in the production department, it was discovered that the average time for assembling of a coach will take 24hours but it varies according to the types of coach for instance AC EMU takes an average of 20 hours but it takes more time for the assembling of LHB coaches.

TABLE 5

TIME REQUIRED TO ASSEMBLE EACH TYPE OF COACH		
Serial no	Product	Time required(minutes)
1	AC EMU series	1200
2	MEMU	600
3	TRAIN 18	336
4	KM	600
5	DMU	600
6	SPART	600
7	LHB COACHES	1470
8	SPIC & OTHERS	660
9	EXPORT	600

Looking at the company's practical reality, it was discovered that the time required to assemble LHB coaches is 1470minutes, when all products are done at the same time, but the time taken for each type of coach varies.

4. RESULTS AND DISCUSSIONS

Creating an income statement using Throughput Accounting

To prepare an income statement using Throughput accounting, the operating expenses must be distributed based on the time of completion, depending on the amount of sales and the selling price:

Calculating the value of Throughput time

The value of Throughput time must be known in order to extract the share of each product from the operating expenses, as shown in Table 6 below

DERIVING THE VALUE OF COACH THROUGHPUT TIME

Serial n	Product	Sales quantity	Sales price	Operating time/seconds	Value of throughput time
1	AC EMU series	708	343.66	1.69%	412,392.00
2	MEMU	72	83.06	8.33%	49,836.00
3	TRAIN 18	16	49.4	21%	16,598.40
4	KM	16	21.2	37.50%	12,720.00
5	DMU	105	11.24	5.71%	6,744.00
6	SPART	21	6.16	28.57%	3,696.00
7	LHB COACHES	2222	122.5	0.66%	180,075.00
8	SPIC OTHERS	63	363.44	10.47%	239,870.40
9	EXPORT	39	363.44	15.38%	218,064.00
TOTAL					1,139,996.00

NOTE:

Operating time = Total product time (Table 5) / Production quantity (Table 2.)

Throughput time value = sales quantity (table 2) * selling price (table 2) *

Determining the product's share of the value of Throughput time

The product's share of the value of Throughput time = the value of the product completion time (Table 6) / the total value of the time of Throughput of the products (Table 6) x 100 = using AC EMU series as example $291,815,870.29 / 1,061,830,336.89 * 100 = 27.48\%$ throughput time value

The Table 7 below shows the percentage of each product based on the value of throughput time.

THE PERCENTAGE OF EACH COACH BASE ON THE VALUE OF THROUGHPUT TIME			
Serial no	Coach	Throughput time value	Product share from throughput value
1	AC EMU series	27.48%	291,815,870.29
2	MEMU	0.33%	3,588,048.47
3	TRAIN 18	24.83%	263,682,048.00
4	KM	0.02%	203,520.00
5	DMU	0.07%	708,084.59
6	SPART	0.01%	77,614.84
7	LHB COACHES	37.67%	400,086,637.34
8	SPIC OTHERS	8.77%	93,164,357.54
9	EXPORT	0.80%	8,504,155.82
	Total	100%	1,061,830,336.89

Calculate the Product's Percentage of Total Operating Expenses

Using Tables (1) and (7), the share of each coach in operating expenses can be calculated as follows (using AC EMU coach as an example): The product's share of the total operating expenses = the total operating expenses (Table 1) * product's share of the Throughput time value (Table 7)

Serial no	Coach	Sales revenue	Raw material cost	Margin profit	Production cost	Net profit
1	ACEMU series	172,264,386.24	39,718,800.00	132,545,586.24	412,392.00	171,851,994.40
2	MEMU	430,583.04	1,249,272.00	-818,688.96	49,836.00	380,747.04
3	TRAIN 18	12,556,288.00	1,236,624.00	11,319,664.00	16,598.40	12,539,689.60
4	KM	5,427.20	1,326,400.00	-1,320,972.80	12,720.00	-7,292.80
5	DMU	123,921.00	1,333,500.00	-1,209,579.00	6,744.00	117,177.00
6	SPART	2,716.56	1,075,200.00	-1,072,483.44	3,696.00	-979.44
7	LHB COACHES	604,817,290.00	49,995,000.00	554,822,290.00	180,075.00	604,637,215.00
8	SPIC OTHERS	8,956,972.08	2,247,021.00	6,709,951.08	239,870.40	8,717,101.68
9	EXPORT	552,792.24	912,600.00	-359,807.76	218,064.00	334,728.24
TOTAL		799,710,376.36	99,094,417.00	700,615,959.36	1,139,996.00	798,570,380.56

PRODUCT SHARE OF TOTAL OPERATING EXPENSES			
Serial no	Coach	Percentage	Product share from operating expenses
1	AC EMU series	27.48%	524,701,930
2	MEMU	0.33%	6,451,520.10
3	TRAIN 18	24.83%	474,115,679
4	KM	0.02%	365,940.81
5	DMU	0.07%	1,273,177.30
6	SPART	0.01%	139,555.99
7	LHB COACHES	37.67%	719,379,075
8	SPIC OTHERS	8.77%	167,514,941
9	EXPORT	0.80%	15,290,967
	Total	100%	1,909,232,786.32

Creating an income statement using the Throughput accounting approach, based on the results of calculating and determining the share of each product in operating expenses

INCOME STATEMENT BASED ON THE THROUGHPUT ACCOUNTING METHOD

The raw material costs and throughput margins in Table (9) were calculated using the following equations (Light oil as a sample):

Raw Material costs = sales quantity (Table 2) x the cost of producing one coach

Throughput Margin = Revenue - Raw Material Costs

5. CONCLUSION/RECOMMENDATIONS

We have a look at that the cost of some coaches are higher than they have been in the ordinary system, owing to the exceptional bases for allocating costs, where in the traditional system the allocation of cost is primarily based on the extent of production, whereas in throughput accounting the allocation is based on the amount generated on the use of coach through freight charge. The ordinary system's distribution bases may additionally be deceptive in terms of coach unit cost, whereas Throughput accounting focuses on time as groundwork for distributing running expenses. As a result, the company's exercise yielded a earnings of in accordance to Throughput accounting 798,570,380.56), while the traditional resulted in a earnings of (723,419,290.36) in accordance to the usual income statement, this reduction in profit is due to the high cost charged to the merchandise, according to normal method of accounting. In the typical accounting system, product stock is charged with each direct materials and direct wages, as well as oblique industrial costs, this consequences in a expand in cost charged to sales, which leads to minimize profits, while in throughput accounting system, inventory is charged with the cost of raw material for completion (direct materials). Sales are solely charged for direct wages and oblique industrial overheads

We also noticed that the outcome of each coach's activity ranged from high to low, profit increased by (ID 75,151,090.2) over what it was under the traditional system, while the result of other products' activity decreased from what it was under the traditional system Looking at the income statement, it is clear that the company's throughput of some coaches, specifically MEMU, KM, DMU and EXPORT, does not cover its operating expenses. As a result, the company should strive to increase Throughput by increasing sales.

Distributing costs to products in pre-determined proportions based on samples is an incorrect procedure because it misleads the cost of the unit produced, as a product is charged with more or less than necessary, weakening the company's cost accuracy The use of a single basis, time spent in operation according to Throughput accounting, provides accuracy and fairness in cost distribution to products. As a result, the company should strive to increase Throughput by increasing sales.

The study recommends using the Throughput accounting approaches especially Nigerian manufacturing companies because it provides better template and accurate information for planning, administrative decision-making, and its role in more accurately measuring and evaluating performance. In addition, the cost structure classification should be reconsidered in light of the modern manufacturing environment and in accordance with the Throughput accounting approach.

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THE EFFECT OF CAPITAL STRUCTURE AND AGENCY COST ON PROFITABILITY OF LISTED MANUFACTURING COMPANIES IN NIGERIA

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Abstract

The effect of capital structure and agency cost on the profitability of listed manufacturing companies was examined in this study. The study utilized casual research design, ten manufacturing companies in the consumer goods sector was purposively chosen for the study. The study covers period between 2015-2019. The analysis of the study data was analysed 3using descriptive statistics, correlation and panel regression analysis. The outcome of the first test study revealed that the t-statistics = -1.945, p-value (0.0018) which signifies that negative significant exist between long term debt and return on asset. Whereas, the second test shows that a positive significant connection exists between short term debt and return on asset with t-statistic =2.784, p-value (0.0054). The final hypothesis test conducted in the study revealed that asset liquidity ratio is significant and positively related to return on asset evidenced by t-statistic =0.686 and p-value (0.0059). The conclusion drawn from this study is that capital structure and agency cost has significant connection with profitability of the selected Nigeria listed manufacturing companies. This study however recommends that management of the sampled organizations should explore the benefits of using more of debt financing so as to take advantage of tax benefits, they are also advised to reduce their agency cost by improving the level of their asset liquidity ratio.

Keywords: agency theory, asset liquidity, capital structure, firm's profitability, Trade Off Theory.

1. Introduction

Capital structure is one of the utmost enigmatic matters in corporate finance literature (Jiraporn, 2009). Capital structure is referred to as a combination of variety of equity shares of an enterprise and long term sources of funds (Booth, Aivazian, Demirguc-Kunt, & Maksimovic, 2001). Capital structure is also the mishmash of equity and debt financing used by a firm to fund the procurements of its assets. However, the ability of organization to survive in a competitive environment, and the need to increase return on investment (ROI) of the organization investors are some of the reasons why capital structure financing decision is so popular among organizations.

Fang, Kosev, and Wakeling (2014) in their study of the ratio of debt-equity ratio of Australian corporate sector revealed that the leverage of the companies stayed unchanging after year 2012, whereas the amount of leverage falls in majority of other advanced nations which includes the

United State of America. More so, after the crisis the source of finance for private non-financial companies in Australia has been steady. The result of Fang, Kosev, and Wakeling (2014) study revealed that the proportion of debt to equity in euro region is greater than the ratio of debt-equity ratio in the United States and Australia ever since year 2000. This suggests that the non-financial firms in euro area prefer the use of debt finance over equity finance.

Also, an investigation carried out by Bank Negara (2015) shows that the aggregated ratio of debt-equity ratio of Malaysia is the second highest ranked countries among (Latin America, Emerging Asia, Emerging Europe and Malaysia). While emerging Asia ranked first on the list. The investigation also revealed that Malaysian companies prefer to finance their activities by utilizing more equity capital throughout the post monetary crisis era than they did before the monetary crisis occurred.

However, agency costs occur due to the clash of interest and disagreements between management and shareholders (Olagunju, Adebayo, Adenle, & Bamidele, 2021). Agency costs obstruct leverage and increase yield spread (Leland, 1998). Agency problem arises when the principal is unable to monitor the agent's performance. Numerous scholars have studied the connection between agency cost and profitability one of which is the study conducted by Wang (2010) which revealed that agency cost and profitability are negatively correlated. This indicates that high agency cost will result in to a low profitability (Berger & Hann, 2007). The study conducted by Emenyi (2013) also claimed that the agency cost is negatively related to profitability.

More so, an organization's profitability is the measure of shareholders' wealth, it is also regarded as the ability of the firm's to earn profit. According to Albert, Michael and Daniel (2013) Profitability is used interchangeably with the company value. They both create measures that describe wealth creation for shareholders. Lucrative companies are more valuable to investors and shareholders than company making losses. Likewise, change in organization value will leads to change in shareholders' value. Managers are expected to select the capital structure which they are certain of that it will lead in to highest firm value. Hence, the capital structure decisions of companies are vital because poor decisions can affect an organization profitability resulting in to reduction in shareholders' value and vice versa.

In addition, several studies have been conducted on the influence of either capital structure or agency cost on profitability such as the study conducted by Albert, Michael and Daniel (2013) on the effect of capital structure on profitability, Nuhu, Dandago, Muhammed, Ado and Abdulkasim (2020) and Olagunju, Adebayo, Adenle, and Bamidele (2021) also studied the impact of agency costs on financial performance of quoted consumer goods organizations, Awah, Ebiringa and Ugwu (2020) and Kuek, Lau, Lee, Lim and Tan (2017) also reviewed the influence of capital structure decisions on profitability but very few of the researchers has considered using both

agency cost and capital structure together on profitability. Predicated on above, the researchers formulated the hypothesis below to navigate their investigations thus:

H₀: There is no connection between capital long term debt, short term debt and asset liquidity ratio on return on asset (ROA) of the sampled listed Nigeria manufacturing companies.

The study is divided into five sections. Section I, introduced the study. Section II examined concepts on which this work is based and reviewed existing related literature while Section III focused on the methodology adopted in this research. Section IV presented and discussed the results obtained while Section V concludes the study and made necessary recommendations.

2.0 Review of Related Literature

2.1 Conceptual review

An organization capital structure includes equity and debt. The proportion of equity and debt varies in different organization. Capital structure decision plays a fundamental role in enhancing the total profitability of an organisation (Nimalathasan & Brabete, 2010). Capital structure decision can be used to finance firm's asset through the mixture of hybrid securities such as debt and equity. Several components of capital structure are categorized into preference capital, long-term capital and equity capital. Equity capital is the sum of money contributed by shareholders in exchange for retained earnings and shares from preceding years, it is also regarded as the profit used to enhance firms value and to keep the statement of financial position strong. Preference capital comprises of both debentures and equity shares. Debt capital is the long term finance whose payment is made with interest to the bondholders as at the time the liability is matured.

2.1.2 Long term debt, short term debt and profitability:

Awuah-Agyemen (2016) describe debt is a source of external finance which includes short term and long term debts. Short term debt is beneficial to companies facing uncertainty in their tax status when the tax rate is expensive. Short term loan will provide an advanced measure of company needs for finances, whereas long term loan will incur finance cost when the interest is accrued (Plesko, 2000). Several firms will prefer long term debt to finance investment that are long term in nature for example purchase of fixed assets because long term debt financing safeguards organizations from incurring credit supply shocks and the necessity to re-finance later. Further, several firms will choose to use short term loan to re-finance their debt regularly so as to get appropriate loan terms (Bruhn, 2015). Several researchers have used both long and short term debts as proxies for measuring capital structure. For instance, Abor (2005) revealed in his research work that short-term debt has a positive significant connection with profitability while long term debt is negatively significant to profitability. The result of Albert et. al. (2013) on the effect of capital structure on profitability of quoted Ghanaian firms also concur with the findings of Abor (2005). Firms seek to depend on short term debt than on long term debt.

2.1.3 Asset liquidity ratio and profitability

Agency costs includes the cost of choosing suitable agent, examining and gathering information to set performance standards, bonding expenditures by the agents, monitoring managers, and residual losses (Chen 2010). According to Emenyi (2013), agency costs could occur as a result of the decline in outputs, free cash flow inefficiencies and loss of firms' worth. Increase in Agency costs will always have effect on the performance and profitability of a company, if there is increase in agency costs (operating expenses ratio, administrative expenses ratio and asset utilization ratio) there will be reduction in the company returns (Olagunju *et. al.*, 2021).

Moreover, liquid asset ratio is the proportion of organization assets that can be easily exchanged for money to total asset or it can be expressed as the amount of a firm's current assets to its current liabilities, which is used as a measure of solvency (Olagunju *et. al.*, 2021). Asset liquidity ratio is measured as the ratio of current asset to current liabilities. The manager agrees on the ideal way of allocation cash in order to preclude higher risk, the company's manager will also want to borrow loans which are short term in nature, in this circumstances the manager could centre on using more of current liabilities instead of using long term liabilities to finance the firm. When the organization's ability to meet its short-term liabilities is not certain, this specifies that organization could encounter challenges in meeting their short-term monetary obligations. This in turn would affect the bulk of firm's operations and its financial performance negatively (Olagunju *et. al.*, 2021). Agency costs can manifest in countless forms such as unnecessary fringe benefits, greed on the part of managers, corporate fraud and non-optimal investment decision (Henry, 2004).

However, Amengor (2010) stated that there may be differences between the interest of senior managers and that of the middle managers, specifically in a situation where the senior managers are well compensated to attain higher profits than the middle level manager or the middle level managers are not compensated at all. Several scholars have studied the connection between liquidity ratios and pointers of financial performance such as the study of Lartey, Antwi & Boadi (2013) which examined the connection between liquidity and profitability of the banks quoted on the Ghana bursa during the year 2005-2010. While very few has utilized asset liquidity ratio as proxy for agency cost, one of the few study where asset liquidity ratio was used as proxy of agency cost is the study of Olagunju *et. al.* (2021).

2.1.4 Profitability

Return on Assets (ROA) is a gauge of how cost-effective a firm in relation to its total assets. Return on assets reveals how efficient management is at utilizing the organization assets to generate revenue. Return on asset is expressed as: Net Income (profit after tax) divided by Average Total Assets of the firm used by Daines (2001); Tifow and Savilir (2015); and Olagunju, Adebayo, Adenle, and Bamidele, (2021) to measure firms value.

2.1.5 Capital structure, Agency cost and Profitability

The influence of capital structure decisions influences firm value and profitability by maximizing value through the current value of tax savings from debt usage. This however denote that firms should utilize up to 100% debt in other to maximize their value. More so, the adverse effect of excessive use of debt is that it will result in to decrease in value which may arise due to the increase in the financial distress and fall in firm's credit rating. Further, capital structure policy effect on profitability is that it can increase both gains and losses of organization Ross, *et al.* (2009). Agency cost can be minimized by the use of debt, since debt can help to reduce free cash flow. The existence of debt makes manager to consider using fewer perquisites and become more efficient. (Ang et al., 2000).

However, in the commercial world, agency costs refer to as the expense of disagreement incurred by organizations as a result of the inability of the manager to act in the interest of the shareholders (Kuek et. al 2017). Increase in Agency costs will always have effect on the profitability of a firm, if there is increase in agency cost proxies such as (cash-flow ratio, operating expenses ratio, administrative expenses ratio and asset utilization ratio) there will be reduction in company returns.

2.2 Theoretical review

Several theories have been used in examining the link between capital structure, agency and financial performance in literature. This study was underpinned on 2 theories which provide justification for how capital structure and agency cost influence organization's profitability. These theories are trade off and agency theories.

2.2.1 Trade Off Theory

This theory was propounded by Modigliani and Miller in 1963. Trade off theory is used for choosing an optimal capital structure so as to stimulate firms value by reducing market operational cost Sheikh and Wang (2010). More so, an ideal capital structure is achieved under trade off theory when an offsetting conditions exist between the tax deductible benefits from debts and risk of bankruptcy. An optimal capital structure is usually attained when the costs and benefits of debt usage cancel out each other.

Further, agency cost and financial distress theories assume that financing the firm with higher amount of debts can leads to bankruptcy of the firm because the financial distress problems can force the company to be liquidated (Awan & Amin, 2014). While a company having a high financial distress cost would lessen the capacity of debt funding in capital structure.

The limitations of trade off theory are; it observed that debt capital does not definitely have to be recognized with optimal debt, this signifies that challenges faced by firms when amending their capital structure is ignored. Also, the other limitations of trade off theory is that static empirical analysis is incapable of explaining the dynamic nature of firms' equity (Millers 1977). According

to Titman & Tsyplakov, 2007 and Flannery & Rangan (2006), trade-off theory is still well supported by theoretical and empirical studies.

2.2.2 Agency Theory

Agency theory was propounded by Stephen Ross and Barry Mitnick in 1973 which is based on the assumption that principal and agents act rationally and engage in activities that will maximize their own wealth. Agency theory is grounded on the postulation that each of the parties pursue their own selfish interest and use information accessible to them to their own gain at the detriment of the other party which creates agency problems (Holtz & Sarlo Neto, 2014). Information asymmetry between the organization shareholders and managers is one of the causes of agency problem. Some other causes of agency conflict are earnings retention, moral hazard, low effort level, risk aversion and time horizon.

According to Jensen & Meckling (1986) agency conflicts can be reduced by creating remuneration packages for executive directors and senior manager, having board of executives that will monitor the decision taken by its managers and having a large proportion of debt on the long term capital structure of the company. However, various literatures show criticism on agency theory such as literature by (Perrow 1986 and Pepper & Gore 2012). In addition, one of the limitation of agency theory is that, managers are considered as opportunists and agency theory also ignores managers' competences (Sheilfer & Vishny 1977).

2.3 Empirical review

Many scholars have undertaken the influence of capital structure and agency costs on firm's profitability in developed and developing countries including Nigeria.

Relationship between capital structure and profitability

Gill, Biger, and Mathur (2011) in their study of the impact of capital structure on American service and industrialized companies' profitability which covers a period of 2005 – 2007. Their study revealed that short term debt ratio is significant and positively connected to profitability in both firms. They also revealed in their study that short term debts are cheaper and have low interest rate that will increase firm profitability. More so, a positive significant connection is said to be present between long term liability and profitability in manufacturing industry.

A similar study conducted by Tifow and Savilir (2015) on the association between capital structure and performance of Turkey manufacturing companies with the study period ranging from year 2008 to 2013 utilizing secondary data. Their study revealed that a significant negative connection between short term liability ratio and firm's profitability. Also, their study found that long term liability ratio and return on equity ratio has a significant negative connection. Their study

recommends that companies should choose to utilize long term liability than short term liability in order to increase profitability.

However, Kakanda, Bello, and Abba (2016) empirically reviewed the effects of capital structure on performance of companies listed in the Nigeria consumer goods sector. The study utilized ex-post facto research design. Hierarchical multiple regression analyses, Descriptive statistics, correlation were used to analysed data and test the hypotheses of this study. The result of the study revealed that a positive relationship exists between firm's capital structure and financial performance. The study established that a positive and significant relationship exist between long term liability and return on equity.

Relationship between Agency cost and profitability

Furthermore, Wang (2010), revealed in his study of the influence of free cash flows and agency costs on firm performance using five hundred and five public listed firms on the Taiwan stock exchange during a period ranging from 2002-2007 that agency cost has positive influence on firm performance.

Salim (2014) investigated the association between agency costs and firm performance of companies quoted on the Nairobi securities exchange. The study population comprises of all the quoted companies listed on Nairobi stock exchange while the sample size is 52 companies. The study period covers year 2008-2012. The study utilized secondary data. Correlation analysis and multiple regression were used to decide the link between agency costs and the sampled firms' financial performance. The study discover that agency cost is positively related to firm financial performance which shows that the rise in agency costs by one unit will leads to 0.02 increase in financial performance.

In addition, Nuhu, Dandago, Muhammed, Ado, and Abdulkasim (2020) examined the impact of agency costs on financial performance of consumer goods firms quoted on the Nigerian Stock Exchange. The study used documentary data gathered from financial reports of the selected firms for year 2007-2016. The study utilized panel data regression for analysis. The findings from their study revealed that there is an inverse association between agency costs and financial performance, signifying that agency costs will bring about a decline in financial performance, if not accurately managed.

Furthermore, Olagunju, Adebayo, Adenle, and Bamidele (2021) in their study of the influence of agency costs on Nigeria quoted consumer goods sectors financial performance opined that asset utilization ratio is positively significant to return on asset. The study draws conclusions from the analysis of the data of ten sampled consumer goods firms within a period of 2015 to 2019. The hypotheses of the study was analysed using both correlation and panel regression analysis.

3.0 Methodology

The study is a panel study which make use of expo-facto research design. The data used for the purpose of this study was gathered from secondary sources such as annual financial reports and account of the selected quoted firms in the Nigeria consumer goods manufacturing sector for a period of 5 years between 2015-2019.

However, the study population comprises of all the manufacturing companies listed on the Nigerian Stock Exchange. The study used purposive sampling which is a method of non-probability sample. Ten (10) manufacturing firms in the consumer goods sector were carefully chosen based on accessibility and convenience. The consumer goods sector was chosen because it one of the sector with the highest output and sales in Nigeria. More so, 2015 was chosen as the base year because it is three years post IFRS adoption by all firms in the preparation of their financial report in other to avoid mixing pre and post IFRS adoption in order to have consistent findings. Descriptive (mean, median, maximum, standard deviation, skewness and maximum) and inferential statistics (panel regression and correlation analysis) was utilized to achieve the stated objectives.

3.1 Model Specifications

The model of the study established the connection between the dependent variable firm's profitability proxy by return on Assets (ROA) and independent variables capital structure and agency costs. Capital structure is proxy by short term and long term debts while agency cost is proxy by asset liquidity ratio (ALR).

Table 1. Measurement of variables

	Narrative	Source	Apriori Expectation
Dependent variable			
Return on asset (ROA)	$\frac{Net\ Income}{Total\ Average\ Assets}$	Nuhu et.al (2020), Olagunju, Adebayo, Adenle, & Bamidele (2021)	
Independent variables			
Long term debt	$LTDR = \frac{Total\ Long\ term\ debt}{Total\ Asset}$	Habib, Khan & Wazir (2016)	-ve
Short term debt	$STDR = \frac{Total\ Short\ Term\ Debt}{Total\ Asset}$	Shubita & Alsawalhah, (2012).	+ve
Asset liquidity ratio (ALR)	$\frac{Net\ Sales}{Average\ Total\ Asset}$	Siddiqui, Rasaq, Malik and Gul (2013)	+ve
Control variable			
Firm size	It is expressed as natural log of total assets.	Khadimat et. al (2014)	+ve

Source: Author’s computation (2022).

Model specification

ROA Model

$$ROA = f(LTD, STD, ALR, FS) \text{ -----} 3.1$$

$$ROA_{it} = \beta_0 + \beta_1 \text{LogLTD}_{1it} + \beta_2 \text{LogSTD}_{2it} + \beta_3 \text{LogALR}_{3it} + \beta_4 \text{LogFS}_{4it} + \mu_{it} \text{ -----} 3.2$$

Where:

ROA= Return on Asset

ALR = Asset Liquidation ratio

LTD = Long term loan

STD = Short term loan

FS = Firm size

Log = Natural logarithm of the variables

β_0 = Constant parameter

β_1 = Regression Coefficient of variables,

β_2 = Regression Coefficient of variables,

β_3 = Regression Coefficient of variables,

β_4 = Regression Coefficient of variables,

U_{it} = Error terms

4.0 Results and Discussion

Table 2: Descriptive Statist

	ROA	LTD	STD	ALR	FMSIZE
Mean	0.049043	0.1684719	0.352372	1.052265	10.47819
Median	0.037613	0.1396493	0.365457	0.894633	11.065
Maximum	0.264935	5	3	3.275757	11.58969
Minimum	-0.040439	0.0082527	6	0.401816	7.439775
Std. Dev.	0.064379	0.142111	0.179495	0.637219	1.230686
skewness	1.792536	1.815315	0.0791411	1.918648	-1.474884
Sum	2.452126	8.423596	17.6186	52.61327	523.9093
Observation	50	50	50	50	50

Source: Computed by the Researcher using STATA (2022)

Table 2 revealed that the mean, standard deviation and skewness values of ROA are 0.049, 0.064 and 1.793. While the mean, standard deviation and skewness value of LTD are 0.168, 0.142 and 1.815. Similarly, the mean, standard deviation and skewness values of STD are 0.352, 0.179 and 0.0791 respectively. Also, the agency cost proxy ALR has mean, standard deviation and skewness value of 1.052, 0.637 and 1.919 respectively. The control variables FMSIZE also has mean, standard deviation and skewness values as follows; 10.478, 1.231 and – 1.475.

Correlation and Multi-Collinearity Test

Correlation helps in deducing the degree or extent of the connection among variables as the excessive correlation among independent variables could lead to multi-collinearity, which could subsequently lead to misleading results.

Table 3: Correlation and Multi-Collinearity Test

	ROA	LTD	STD	ALR	FMS	VIF	1/VIF
ROA	1						
LTD	-0.1787	1				1.05	0.9513
STD	0.1708	0.3030	1			1.22	0.8177
ALR	0.0281	-0.3866	-0.4574	1		1.28	0.7806
FMS	0.2536	0.1406	-0.0925	-0.4415	1		

Source: Computed by the Researcher using STATA (2022)

The correlation table shows that ALR has a positive correlation coefficient of 0.028 with return on assets, while the correlation between ROA and LTD is weak and positive to the tune of -0.178. Also, STD has a correlation of 0.17 which signifies a positive but very low correlation with ROA. The multi-collinearity test results reveals that all the variables in this study met the criterion that tolerance level is >0.1 or $VIF < 10$. Therefore, the presence of multi-collinearity does not create any problem in this study.

4.1 Hypothesis Testing

H_0 : There is no connection between capital long term debt, short term debt and asset liquidity ratio on return on asset (ROA) of the sampled listed Nigeria manufacturing companies.

Method: Panel Regression Analysis

Table 4

Variables	Coefficient	Std. Error	t-Statistics	Prob.
C	0.0085	0.0287	0.298	0.7659
LTD	-0.1162	0.0597	-1.945	0.054
STD	0.1416	0.0509	2.784	0.0054
ALR	0.0097	0.0141	0.686	0.0059
R-squared	0.2432	Mean dependent vars		1.5668
F-statistics	3.6100	Prob (F-statistics)	0.0123	

Source: computed by the Researcher using STATA (2022)

The outcomes in **Table 4** indicate an R^2 of 0.2432 which suggests that long term debt, short term debt and asset liquidity ratios had high explanatory power of 24.3% on return on asset. The F-statistics value and its p-value of 3.61 and 0.0123 depicts that the model is fit. LTD has a t-statistics and p-value of -1.945 and 0.0018 respectively this infers that LTD is negatively significant to ROA of the sampled quoted companies in the consumer goods sector. More so, a percentage increase in LTD would lead to 11.6% decrease in ROA of the sampled firms. The result of the findings of Tifow and Savilir (2015) was consistent with the result of this findings, whereas the result of Kakanda, Bello, and Abba (2016), which shows a positive significant differs from the outcome of this findings.

Also, the result shows that STD has a positive significant connection with ROA with t-statistics of 2.784, p-value (0.0054) which is less than the p-value 0.05. However, this result infers the null hypothesis formulated for this study should be rejected. The findings of this study, therefore, specifies that a percentage rise in short term debt would lead to a significant 14.2% increase ROA of the sampled listed manufacturing firms in Nigeria. Furthermore, the findings of Gill, Biger, and Mathur (2011) is consistent with this result while the result of this study is inconsistent with the findings of Kakanda, Bello, and Abba (2016), Tifow and Savilir (2015) the former found a positive but no significant connection between short term liability and firms' profitability while the latter found out that short term liability has a negative significant connection with firms' profitability.

The result also indicates that there is a positive connection between ALR and ROA of the sampled firms supported by a t-statistics of 0.686 and p-value of 0.0059 which is less than 5% p-value. Further, the outcome of the study revealed that an increase in ALR percentage will lead to 68.6% increase in ROA of the sampled firms. Similarly, Olagunju, Adebayo, Adenle, and Bamidele (2021), Khadimat, Pakistan and Rehman (2014) and Priya and Nimalathan (2013) attested to this in their studies that there is a significant relationship between asset liquidity and return on assets.

4.2 Discussion of Findings

Relationship between Long term debt (LTD) and Return on Asset (ROA)

The test of hypothesis used for the purpose of this study reveals a significant relationship between capital structure, agency cost and firm's profitability of quoted manufacturing companies in Nigeria. The findings of this study, therefore, indicates that a percentage rise in long term debt would result to a significant 19.5% decrease in the return of asset of the sampled listed manufacturing companies in Nigeria. This signifies that the higher the long term debt the lower the firms' profitability, the lower the long term debt the higher the firm's profitability. In addition, the financial health of a company will be determined by the company's debt ratio, the ratio helps

the company's investor to identify the rate of risk and high debt ratio will have a negative effect on firms' value and performance.

However, the result of those study indicates that the increase in long-term debt was connected with reducing profitability for the quoted sampled consumer good manufacturing firms in Nigeria and the decrease in long-term debt was related with increasing profitability for quoted consumer good manufacturing firms in Nigeria. This also denotes that, for consumer goods manufacturing firms in Nigeria, long-term debt is quite costly because its usage is related with deteriorating profits. In Nigeria long-term debt is commonly interest bearing because they are typically always gotten from financial institutions and banks who always charge interest. Likewise, evaluating long-term capital is difficult and costly in Nigeria because of the negative economic conditions which has contributed to deteriorating profitability of Nigeria quoted manufacturing firms. The result of the findings of Tifow and Savilir (2015) was consistent with the result of this findings, whereas the result of Kakanda, Bello, and Abba (2016), which shows a positive significant differs from the outcome of this findings.

Relationship between Short term debt (STD) and Return on Asset (ROA)

The result shows that a percentage increase in short term debt would lead to a significant 27.8% increase in the sampled companies ROA. This however signifies that a higher short term debt will lead to higher firm's profitability vis a vis. This result is in line with the findings of Abor (2005). The outcome of this study also indicates that increase in short term debt is associated to decrease in profitability whereas decrease in short term debt would lead to decrease in profitability. The use of short term debt is cheaper for firms in the Nigeria consumer goods sector. In Nigeria majority of the short term debts are usually non-interest bearing or bears a very low interest for examples; trade creditors, accruals and non-bank loans. In addition, the findings of Gill, Biger, and Mathur (2011) is in accordance with the outcome of this study whereas the outcome of this study differs from the findings of Kakanda, Bello, and Abba (2016), Tifow and Savilir (2015) the former found a positive but no significant connection between short term debt and firms' profitability while the latter found out that short term debt has a negative significant connection with firms' profitability.

Relationship between Asset Liquidity Ratio (ALR) and Return on Asset (ROA)

The outcome of this study also shows that ALR is negatively significant to ROA of the sampled firms. ALR is an inverse measure of agency cost therefore the result infers that a higher ALR is as a result of low agency cost which in turn result into higher ROA. According to Amengor, (2010) the capability for organizations to meet their short term liabilities is as a result of their asset liquidity ratio. The weakness in ALR reveals that firms may face challenges in meeting their short terms obligations. Hence, a high asset liquidity ratio signifies that the company is able to meet its current liabilities as at when due. A low asset liquidity ratio may occur when the manager intends

to reduce risk by taking more of short term loan than long term debts to finance long term assets of the company.

Moreover, a low asset liquidity ratio specifies that companies may have troubles in meeting their current obligations. A not too high asset liquidity ratio is a good sign to the investors and shareholders, it may specify that the firm is efficiently using its current assets or its short term funding facilities. It is advisable for companies to maintain liquidity ratio at a safe limit of 2:1 (Riyanti & Darto 2019). Asset Liquidity ratio can be easily manipulated by the managers.

Howbeit, to buttressed the result of this study is in accordance with the results of a study of Olagunju, Adebayo, Adenle, & Bamidele (2021); Khidmat, Pakistan and Rehman (2014) and Ruziqa (2013) who all found that asset liquidity ratio has a positive significant relationship with return on asset. Whereas on the contrary the study conducted by Haroon, Waqas, Osama, Naeem and Kashif (2020) and Nobance, Ellili and Abraham (2017), revealed that that there is a negative connection between agency costs and financial performance.

5.0 Conclusion and Recommendations

The influence of agency cost and capital structure on profitability of quoted Nigeria consumer goods firms were examined in this study. The variables of the study are capital structure, agency cost and firm's profitability, while firm size is examined as control variables in the study. In order to attain the purpose of this study panel regression and correlation analysis were used to analyse the data gathered for this study. The study therefore concludes that capital structure and agency cost are significantly related to the profitability of quoted consumer goods firms in Nigeria. The findings show that there is a negative significant connection between long term debt and profitability and also there is a positive significant relationship between short term debt, asset liquidity and profitability.

More so, based on the outcome of the study managements of listed consumer sector are advised to take advantage debt to fund their activities. More so, firms making losses and firms with high tax credits may not find debt capital very useful and so they may use it with extreme care. Hence, the higher the tax rate, the more advantageous it will be to use debt funding but it is advisable for the firms to take caution because the use of too much debt increases risk. The study also recommends that companies management should ensure optimal allocation of fund and make sure that the capital structure improve firms' profitability. Further, the management of quoted firms in the consumer goods sector should motivate their mangers so as to ensure increase in the managers' effort level. Lastly, the organization managers are advised to improve the firm asset liquidity ratio without manipulating the ratio figures.

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THE EFFECT OF CORPORATE SOCIAL RESPONSIBILITY AND OWNERSHIP STRUCTURE ON FIRM VALUE: THE MEDIATING ROLE OF CORPORATE PERFORMANCE

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ABSTRACT

This study empirically examined the impact of corporate social responsibility and ownership structure on firm value with the mediating role of firm performance in Nigeria. Ex-post facto research design and secondary data comprising of eleven (11) deposit money banks were obtained for the period 2010-2019. Variables of cost of corporate social responsibility, total ownership concentration, book value to market value ratio, and return on equity were computed from the annual reports and accounts of the deposit money banks. Data obtained were analysed using a panel data econometric method (fixed effect regression). The result obtained showed that the independent variables (cost of corporate social responsibility, total ownership concentration, book value to market value ratio) have positive and significant impact on return on equity. Given the findings of the study, it was recommended among others that management should continue to support corporate social responsibility initiatives and activities since any organization that do not invest much in corporate social responsibilities, its long-run existence may be threatened.

Keyword: Corporate social responsibility; Ownership structure; Firm value; Corporate performance

1. INTRODUCTION

Maximizing the firm value is one of the main goals for every company in the long term. The maximization objective of firm value proves that companies can increase their financial wealth both internally and externally. According to Carroll and Bochohl (2003), firm value is interpreted as the market value or the price of company's shares; the higher the share price, the higher the firm value is. Firm value is necessary for investors because the market evaluates the company's overall performance, both current and future. The growing development of community activists and institutions, as well as technological advancements has encouraged and demanded the company to provide social responsibility for the community in an effort to increase the value of the company.

Corporate social responsibility (CSR) is a corporate responsibility to all stakeholders, including customers, employees, shareholders, communities, and the environment in all aspects of the company's operations and these cover economic, social and environmental aspects. In making decisions related to company's activities, an organization considers not only the economic benefits, but also the social and environmental impacts that exist around the company. CSR is the commitment of business to contribute to sustainable economic development, working with employees, their families and the local communities. CSR can also be seen as an organization's obligation to conduct business in such a way so as to safeguard the welfare of society while pursuing its own interests.

Clark (1916) emphasized the importance of transparency in business dealings, asserting that “if men are responsible for the known results of their actions, business responsibilities must include the known results of business dealings, whether these have been recognized by law or not”. In Nigeria, the origin of the concept can be traced back to concerns for the fundamental rights of human beings (Babalola, 2013). This era was filled with legislation designed to regulate business and industry and it was clear that business would have to accommodate public interest if free enterprise was to survive.

Over the years, one issue that has frequently been addressed is, for what and whom companies are responsible to when pursuing business? This is because many believe that the only responsibility of a business is to ensure maximum profit to its shareholders who in turn will determine how to use resources. This is line with Friedman’s statement that “the business of business is business”. Friedman stated that “companies should not take on any additional responsibilities since that will diminish the profit-making focus and maybe most importantly, companies lack both the democratic and legal base to pursue such societal activities.

Furthermore, other scholars argued that CSR is a “fashionable nonsense”. It is not good for companies to start weighing the merits of competing social, economic and environmental goals that is the job for elected governments. Instead, managers should serve the people, who pay their salaries. A radically different view, is that of those who argued that, a company is responsible for all its stakeholders and should therefore take greater responsibility for the society at large and seek to solve social and environmental problems in its market

In any case, the anti-CSR lobby is losing the argument because some 68 percent of 1,100 chief executives interviewed in the United States (US) opined that CSR was vital to profitability (Akindele 2011). Today, most corporate managers believe that business operations should go beyond the simple prospect of money making. Thus, managers should try as much as possible to incorporate the interests of the employee, business partners, customers, shareholders and society at large into their decision-making which offers the best guarantee for consistent profitability.

There is no gain saying the fact that most multinational corporations has brought development that benefits many local communities. However, CSR has the potential of both positive and negative impacts. That is, most of the benefits local communities enjoy from CSR programmes of come at a cost to the local communities, either by omission or commission, (Abefe-Balogun, 2011). Previous studies on the relationship between CSR and firm value did not provide conclusive evidence; other revealed that there is significant relationship between CSR and firm value or profitability.

The significance of this study is twofold. As the literature review is not so much on this topic in the context of developing country like Nigeria, this study contributes to literature in the context of developing countries. This study will fill out the gap that has been identified. This study will help to improve the knowledge and managerial practices on CSR. Furthermore, the role of CSR and ownership structure on firm performance is a fundamental issue that needs to be addressed in order to ensure any organizations long term success.

2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Empirical Review

Previous studies on the relationship between CSR, ownership structure on firm value and corporate performance did not provide conclusive evidence; others revealed that there is significant relationship while others provide contrary views. For instance Shehu(2013) examined the influence of CSR on profit after tax of some selected deposit money banks in Nigeria. The study found that CSR has significant effect on profitability. Similarly, Richard and Okoye,(2013) investigated the impact of CSR on deposit money of banks performance in Nigeria and found that CSR has a great impact on the society by adding to the infrastructures and development of the society.

Babalola, (2013) investigated the impact of social audits on corporate performance among Nigerian manufacturing firms and agreed with other researchers such as Sehu (2013); Richard and Okoye (2013); Lee, (2008) and Abefe-Balogun (2011) who affirmed that CSR has a positive and significant relationship on organizational performance. Akindele (2011) also examined the extent and role of the retail banking industries in CSR practices to help achieve sustainable growth and development in the local communities. The study indicated that there is a significant relationship between bank profitability and CSR practices.

In the same way, Olayinka and Temitope (2011) used qualitative research method to examine the relationship between CSR and financial performance in developing economies. The result showed that CSR has a positive and significant relationship with the financial performance measures. Amole *et al.* (2012) also used ordinary least square (OLS) method in testing the relationship between CSR and firms financial performance. The results of the regression analysis revealed that there is positive relationship between banks CSR activities and profitability.

The study of Moore, (2011) and Amaeshi et al (2016) found that CSR has negative relationship with profitability, while Barnett and Salomon, (2016) discovered no relationship between CSR and profitability. Moore, (2011) also investigated the relationship between CSR and corporate financial performance and the study reported negative relationship between CSR and corporate financial performance. The result of Wright and Ferris (2017) is in line with Moore, (2011) who found negative relationships.

Results of the research conducted by Islam (2012) and Iqbal (2012) showed that institutional ownership has an effect on firm value. Hence, if it is associated with firm value, institutional ownership has an effect that is functioning as a tool that can be used to reduce agency conflict. Results of the research conducted by Lee (2018) showed that CSR has an effect on firm value.

The study of Nicolau (2018) showed that foreign ownership has an effect on firm value, in which an increase in foreign ownership correlates with an increase in company performance which in turn will increase the value of the company. Results of the research conducted by Shehu (2013) and Kumar (2012) showed that managerial ownership has a significant effect on firm value. Given the above, there is mixed results in the literature as well as little or no study that has assessed the effects of CSR and ownership structure on firm value with the moderating role of corporate performance.

2.2 Theoretical Framework

The theoretical framework for this study is drawn from the Stakeholder Theory. The basic promise is that business organizations have responsibility to various groups in society - the internal and external stakeholders- and not just the owners i.e. shareholders (Adeoye, 2018). The responsibility includes a responsibility for the natural environment; decisions should be taken in the wider interest and not just the narrow shareholder interest(Tutor 2u.net). According to Wright and Ferris (2017), stakeholder theory is based upon the assertion that maximizing wealth for shareholders, which fails to maximize wealth for society and all its members and that only a concern with managing all stakeholder interest. Stakeholder theory states that all stakeholders must be considered in the decision making process of the organization.

The theory states that there are three reasons why this should happen: it is the morally and ethnically correct way to behave; doing so actually also benefits the shareholder's; and it reflects what actually happens in an organization. Stakeholder theory suggests that idea that investing time and other resources in addressing stakeholders' interest is a justifiable managerial activity (Rapti & Medda, 2012; and Pau & Domingo, 2013). In this way stakeholder theory stands in contrast with the past explicit profit-oriented focus held by business owners, which was the focus of previous strategic and planning approaches in management literature (Ruggie, 2002).

3.0 METHODOLOGY

The design adopted for this research is the *ex-post facto* wherein the researcher, as postulated by Ruggie (2002), cannot manipulate the study's data. The ex-post facto research design is mostly used to determine the cause-effect relationship between dependent and independent variables to establish a link (Ruggie, 2002). This research data is a panel in nature with a time interval of 2010-2019 and a cross-section consisting of eleven deposit money banks in Nigeria. The model of the study is adopted from the study of Shehu (2013), who studied the impact of CSR on Banks profitability in Nigeria; the model is given as:

$$ROA = f(CSR) \quad (3.1)$$

Where; ROA: Return on asset; CSR: Cost of social responsibility; Other variable are included in the model to capture ownership structure and firm value, thus the model is re-specified as follows:

$$ROA = f(CSR, TCC, B/M) \quad (3.2)$$

Where: TOC: Total ownership concentration; B/M: Book value to market value ratio. Explicitly, the model is stated as:

$$ROE_{i,t} = \alpha_i + b_1CSR_{it} + b_2TOC_{it} + b_3BM_{it} + \epsilon_{i,t} \quad (3.3)$$

Where; α_i represents the individual cross-section unobserved latent variable, which could be fixed or random, and the stochastic term follows a two-way error component for the time interval and cross section given as:

$$\epsilon_{it} = \mu_i + V_{it} \quad (3.4)$$

Dependent Variable:

Return on Equity (ROE): ROE shows the profit generated by each unit of shareholders' funds in the business. It measures the company's profitability to its shareholders' funds. In other words, it shows how effectively the deployment of shareholders' funds to generate profits. ROE is an indication of how profitable a company is by comparing its net income to its average shareholders' equity, and a higher value of this ratio means greater efficiency on the part of the management of the company in utilizing funds provided by its owners (Anwaar, 2016). ROE is computed as follows:

$$\text{ROE} = \text{Net Income} / \text{Shareholders' Equity} \quad (3.5)$$

Independent Variables

Book Value to Market Value Ratio (B/M): B/M is used to evaluate firms' intrinsic value by comparing its book value to its market value. A B/M stock earns positive excess returns while a low B/M stock earns low returns. In equation,

$$\text{B/M} = \text{Common Stock} / \text{Market Capitalization} \quad (3.6)$$

Total ownership concentration (TOC): is measured by the sum of all major shareholdings in the deposit money bank. **Cost of Corporate Social Responsibility (CSR):** the total amount spent on CSR, it is measured in Naira.

According to Breitung (2000), panel data or longitudinal data typically refer to data containing several individuals' time-series observations. The panel data observations involve at least two dimensions; a cross-sectional dimension, indicated by subscript i , and a time-series dimension, indicated by subscript t . According to Darret and Haj (2002), panel data are superior to pure time-series and cross-sectional data because they are more accurate in the inference of model parameters. Panel data gives the greater capacity for capturing the complexity of human behaviour than a single cross-section data; more suitable for uncovering dynamic relationships; has more degree of freedom, which is better for hypothesis testing; less collinearity and is informative.

Equation 3.3 was estimated using the fixed and random effect methods. Hausman's test was applied to determine the appropriate estimation method, which can be Fixed or Random Effect. The Hausman test differentiates between the fixed effect model and the random effect model in panel data. In the Hausman test hypothesis, random effects (RE) is preferred under the null hypothesis due to higher efficiency, while under the alternative hypothesis, fixed effects (FE) is at least as consistent and thus preferred. Before estimating the panel regression, it is necessary to conduct the stationarity test to determine the regression variables' stationarity properties.

The panel Stationarity test was carried out using Levin, Lin, and Chu (LLC) test and Breitung's unit root test to determine the stationarity properties of the variables used for multivariate analysis. According to Blungmart (2000), the LLC and Breitung's test are appropriate for testing Unit Root when the panel is a micro panel such that the time intervals is lower than the cross-sections as in the case of this study where the panel data is micro given that the time interval " t "=10(2010-2019) lower than the cross-section " i "=11. Regression was used for estimation; some tests used to evaluate the regression are Multiple R, F statistics, " t " statistics and R^2 . The regression equation is adequate if the computed F-statistic is higher than the tabulated F-statistic.

4. RESULTS AND DISCUSSIONS

The summary statistics showed the mean, median, maximum, minimum, standard deviation, skewness, kurtosis, Jacque-Bera and probability of each of the variables as presented below:

Table 4.1: Summary Statistics

	B/M	CSR	ROA	TCC
Mean	5.609967	19.73427	247205.5	65.99405
Median	4.400000	19.89500	181721.5	64.30013
Maximum	53.00000	44.00000	1362812.	106.3525
Minimum	0.345434	-20.79000	25777.73	3.550438
Std. Dev.	6.376244	9.016568	207406.3	18.49433
Skewness	5.372722	-1.180990	2.447859	-0.246623
Kurtosis	36.58949	8.524424	11.55492	3.294809
Jarque-Bera	3.311375	4.411501	3.211921	1.513433
Probability	0.930821	0.837131	0.930813	0.469205
Sum	617.0964	2170.770	27192608	7259.345
Sum Sq. Dev.	4431.557	8861.536	4.69E+12	37282.38
Observations	110	110	110	110

Source: Author's Computation Using E-view version 11.0

It was observed from the above summary statistics with reference to the JarqueBera estimates and probability value that all the variables were are normally distributed due to their high probability values of 0.930821, 0.837131, 0.930813 and 0.469205 respectively which is higher than the probability value of 0.05 (5% level of significant). This section examines the graphical analysis on the data to show the trend and movement of the data from 2010-2019.

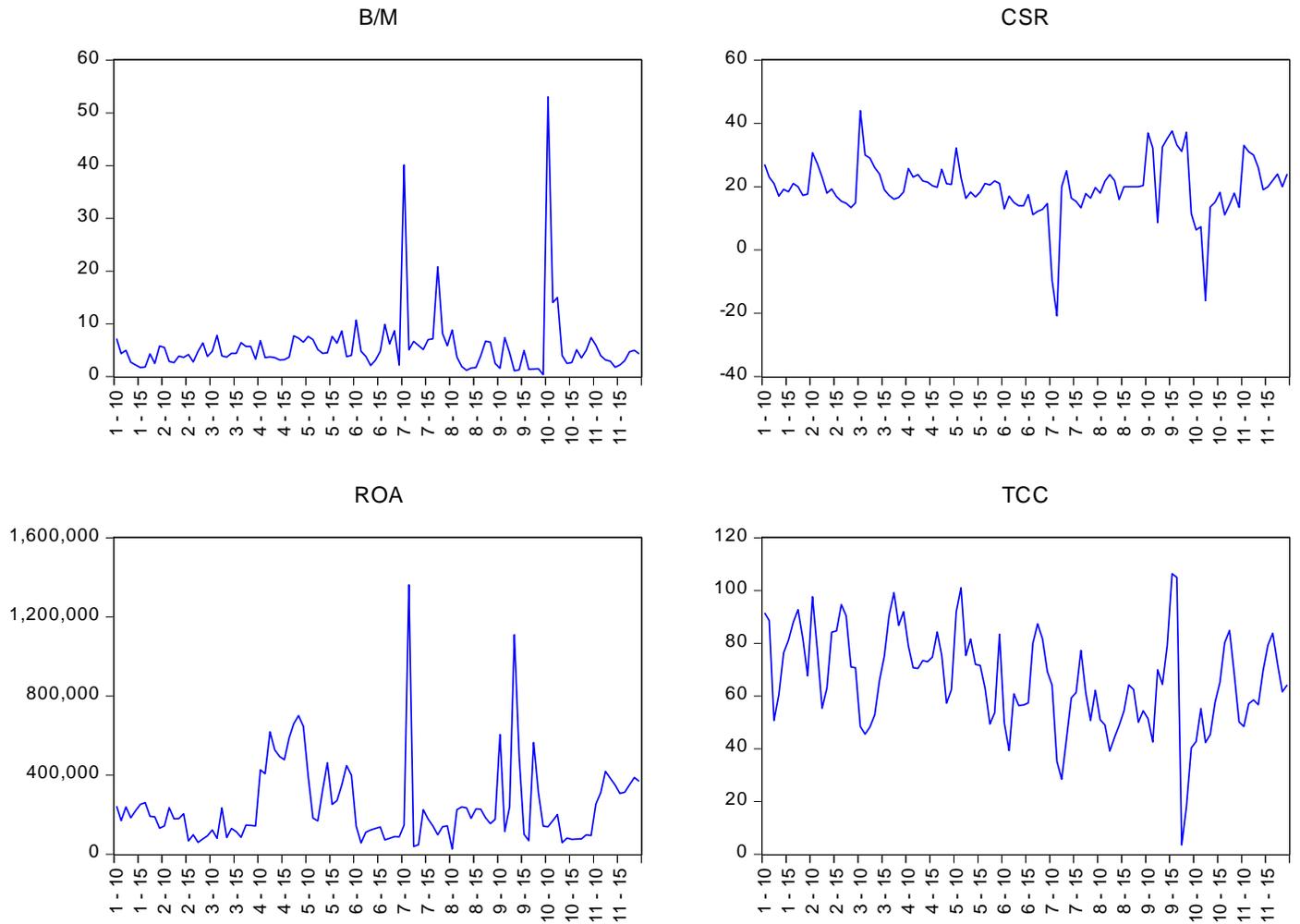


Table 3: Panel Unit Root Test

Variable	LLC Statistic	Prob	Decision	Breitung Statistic	Prob	Decision
TOC	-2.71519	0.0032	Stationary at Level	-4.38401	0.0000	Stationary at Level
ROE	-4.59073	0.0000	Stationary at Level	-3.40391	0.0006	Stationary at Level
BM	-4.89304	0.0000	Stationary at Level	-4.09308	0.0000	Stationary at Level
CSR	-2.31211	0.0112	Stationary at Level	-4.32039	0.0000	Stationary at Level

Source: Computed using E-Views 11 Software Package

From the unit root test, all the variables were stationary at all levels, as shown from LLC and Breitung’s test statistic. Both the LLC and Breitung’s unit root tests yield similar results for all the variables. The impact of macroeconomic variables on stock market returns begins with selecting the appropriate panel model using the Hausman test and the Fixed Effect test.

Table 4: Model Selection

Correlated Random Effects - Hausman Test

Equation: Untitled

Test period random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	31.961070	7	0.0000

Period random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
ROE	-0.001068	-0.001609	0.000000	0.0481
ROA	0.008744	0.009525	0.000001	0.3077
BM	-0.310964	-0.144632	0.002886	0.0020
DY	-2.731112	-3.249801	0.037177	0.0071
EPS	-0.000819	-0.000065	0.000000	0.2624
GR	0.012947	0.015457	0.000007	0.3379
MC	0.000000	0.000000	0.000000	0.0053

Redundant Fixed Effects Tests

Equation: Untitled

Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.504581	(34,306)	0.0699
Cross-section Chi-square	34.414570	34	0.0846

Source: Computed using E-Views 11 Software Package

From table 4, the null hypothesis of Hausman's test is that Random Effect is the preferred model, while the alternate hypothesis states that the Random Effect is not appropriate; thus, the Fixed Effect is the correct model. From Hausman's test statistic of 31.961070 and the probability of 0.0000, we reject the null hypothesis since the probability is lower than 0.01 (1 percent level of significance); therefore, the fixed-effect model is the correct model. Hausman's test result is also in line with the redundant Fixed Effect test.

From the redundant fixed effect result, the null hypothesis of the redundant Fixed Effect test is that the Fixed Effect is the correct model while the alternate hypothesis is that the Fixed Effect is not the correct model. Thus Random Effect is preferable. From the test statistics of 1.504581 and the probability of 0.0699, the null hypothesis is accepted since the probability is higher than 0.01 (1 percent level of significance). Thus Random Effect is rejected in favour of the Fixed Effect. The

redundant Fixed Effect test and the Hausman's specification test chose the Fixed Effect model (FE) over the Random Effect (RE) model.

Table 5: *Fixed Effect (FE) Model*

Dependent Variable: ROE

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CSR	0.009547	0.005247	1.819462	0.0497
TOC	3.281925	0.811394	4.044797	0.0001
BM	0.063684	0.017552	3.628316	0.0003
C	2.793891	0.695777	4.015498	0.0001
Model Diagnostics				
R-squared	0.604275			
Adjusted R-squared	0.578531			
F-statistic	7.934856			
Prob(F-statistic)	0.000000			

Source: *Computed using E-Views 11 Software Package*

From table 5, the estimate of the fixed effect regression showed that all the variables conform to a priori expectations and have the right signs in relation to their impact on return on equity. From the result, a unit increase in CSR on the average will lead to a 0.009547 unit increase in ROE. The results of this study are in line with those of the research conducted by Gutsche, Schulz, and Gratwohl (2016) that CSR has an effect on firm value. The result is statistically insignificant at a 5 percent level of significance, as indicated by the probability value of 0.0497, which is higher than 0.05. Also, a unit increase in TOC on the average will lead to a 3.281925 unit increase in ROE.

The results of this study are in line with the results of the research conducted by Ardekani and Yazdi (2016) and Kumar (2012) that ownership structure has an effect on firm value. The result is statistically significant at a 5 percent level of significance, as indicated by the probability value of 0.0001, which is higher than 0.05. A unit increase in BM on the average will lead to a 0.063684 unit increase in ROE. The result is statistically insignificant at a 5 percent level of significance, as indicated by the probability value of 0.0003, which is higher than 0.05.

From model diagnostic, the correlation of determination (R^2) result showed that about 60 percent changes in stock returns are accounted for by the explanatory variables. The F-statistic also indicated that the model is significant at 5 percent, given the probability of F-statistic as 0.00000

(less than 0.05). Thus, on the whole, macroeconomic variables have a significant impact on stock returns in Nigeria.

5. CONCLUSION AND RECOMMENDATIONS

The study revealed that corporate social responsibility spending and ownership structure has a positive and significant impact on firm performance. The study also concluded that there is positive relationship between book to margin ratio and bank return on equity. But the support lend to the society through bank's CSR will thereby make the business environment more friendly and habitable for organization survival in the long run. Thus, Management should continue support CSR activities because any organization that does not invest much in corporate social responsibilities its long run existence is threaten. Also, government should put Policy framework in place that will be design for corporate social responsibilities in Nigeria to ensure compliance by setting mechanisms and institutions for the implementation of CSR.

Future researchers need to study the relationship of CSR expenditure and profitability in term of other variables such as Return on Assets and Return on Equity in relation with banking sector organizations in Nigeria. When other financial performance indices are investigated that will provide a very clear and broader picture to scholars and it will be very easy for them to confirm that CSR expenditure lead towards financial performance. From the findings the following recommendations are made:

1. Organization Nigeria code of business conduct should define ethical, legal as well as moral standards and expectation in its daily operations;
2. Organization should maintain a caring workplace atmosphere in which people sincerely care about the well-being of others; and
3. Organization should improve on its commitment to and reinforce ethical behaviour. It should take stakeholders' needs into consideration while making operational decisions

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STIMULUS OF INTERNATIONAL PUBLIC SECTOR ACCOUNTING STANDARD AND REPORTING QUALITY OF SELECTED PUBLIC OFFICES IN SOUTHEAST, NIGERIA

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ABSTRACT

Purpose - This study examined the stimulus of international public sector accounting standard (IPSAS) and reporting qualities of selected federal offices in Anambra State. This study was prompted by the need to undertake an enquiry into the transparency and credibility of reporting entities as affected by IPSAS adoption among reporting entities in Anambra State. Three research hypotheses were formulated for the study.

Design/Method/Approach - This study made use of the descriptive survey research design. Data were analysed using Mean Sample T-test with the aid of SPSS version 23.

Findings - The study finds a positive significant association between IPSAS adoption and the reliability and reporting credibility of public entities in Anambra State.

Research Limitations/Implication - The study was restricted to only qualitative information as public entities are under no statutory obligation to declare their financial statement or other quantitative information to the members of the public. Hence, the research results may lack generalizability. Therefore, future studies may attempt qualitative study on IPSAS and reporting entities.

Practical implication - The paper has implications for Policy makers in determination of reporting credibility thereby helping them make informed decision as regards state budget.

Originality/value – The paper is among the first to examine the IPSAS and reporting entities in Anambra State, Nigeria.

Key word: IPSAS, Transparency, Reliability, Credibility

1. Introduction

Widespread corruption in public governance had led to scholarly call for a more robust and efficient reporting standard for public sector entities (Babatunde, & Dandago, 2014; Ball, & Pflugrath, 2012). This need for an accounting change resulted into the introduction of International Public Sector Accounting Standards (IPSAS) by the International Federation of Accountants (IFAC, 2017). IPSAS are high-quality global accrual-based accounting standards which enable governments to produce high-quality financial information that leads to better decision making and builds accountability and trust with citizens (IFAC 2017, p.1.). IFAC (2007) enjoins the global community to adopt and implement IPSAS in public governance, for convergence, uniformity of reporting, improved accountability and transparency.

Recently, there have been yet more persistent calls by both the developed and developing countries for greater transparency, accountability and disclosure of financial information among countries of the world in a bid to raise the level of public confidence in the public sector's financial reports to reflect the stakeholders' expectations. An upsurge in cross-border activities have led to an increase in international transactions among countries of the world which necessitated the need for increased collaboration and commerce across different geographical zones (Ijeoma & Oghogbomeh, 2014). There is now emphasis on the need for increased transparency, uniformity and comparability in the set of accounting standards guiding the preparation of financial statement for public entities (Trang, 2012; IPSASB, 2013).

In Nigeria, despite the fact that operations of government business and accounts have been conducted within the general framework of the principles of fund accounting, the major problem is that financial reporting and public sector accounting is far from the principles in absolute terms and stakeholders' expectation (Obazee, 2008; Christiaens, Vanhee, Rossi & Aversano, 2013). Hence, the current study seeks to carry out critical examination on the operations of government businesses in Awka, Anambra state in line with IPSAS.

1.2 Statement of the Problem

The global clamour for better public financial management that guarantees more accountability and transparency is the concern of both developed and developing countries which had led to the establishment and promotion of the application of International Public Sector Accounting Standards (IPSAS) by public sector entities around the world when preparing their General Purpose Financial (IFAC, 2015). Hence, the global wind of economic integration has now reached the doorstep of accounting profession with intense pressure on nations and state to apply unified accounting Standards in government undertakings. Despite this promotion, there is yet notable sluggishness in the proper implementation of IPSAS amongst reporting entities therefore, jeopardizing the need for high quality reporting by governments in the management of public resources (Alshujairi, 2014).

The problem tackled in the study is therefore in twofold; *Firstly*, available studies on IPSAS rarely employed the mean sample T-test in validating their hypotheses. Muraina, and Dandago (2020) made use of Partial Least Square 3 (SmartPLS 3) technique of analysis; Olaoye, and Talabi, (2018) employed the Ordinary least square (OLS) in validating their hypotheses; Babatunde (2013) employed Karl Pearson coefficient of correlation as a method of data analysis while Nkwagu, Uguru & Nkwede (2016) employed the one-way ANOVA model via Prism GraphPad at 5% level of significance in testing their hypotheses. Only very scanty studies had considered IPSAS and reporting entities using the mean sample T-test as a method of data analysis.

Furthermore, similar studies on IPSAS had been carried out internationally and within the country. Roje, Vasicek, and Vasicek (2010) conducted a study in countries of Croatia, Slovenia, and Bosnia and Herzegovina; (Onuora & Appah, 2012; Babatunde, 2013) carried out a study while sampling the entire Nigeria; and finally, Nkwagu, Uguru and, Nkwede, (2016) conducted a study in southeast, Nigeria. But there is a lacuna of studies carried out in Anambra state, Nigeria. Against the above backdrop, the current study intends to explore the International Public Sector Accounting Standards (IPSAS) and reporting entities in Anambra state of Nigeria.

1.3 Objectives of the Study

Broadly, the main objective of this study is to determine the impact of IPSAS on the reliability and credibility of Public entities in southeast, Nigeria.

The specific objectives are to:

1. Ascertain the effect of IPSAS adoption on transparency of Public entities.
2. Investigate the effect of IPSAS adoption on reliability of Public entities.
3. Examine the effect of IPSAS adoption on credibility of Public entities.

2.1 REVIEW OF RELATED LITERATURE

2.1.1 Concept of IPSAS

IPSAS means International Public Sector Accounting Standards. The international federation of accountants (IFAC, 2012) duly recognizes and supports the global adoption and implementation of IPSAS for public sector financial reporting (Maduka, Aliu & Awheela, 2015). The main issue for public sector reporting is that most governments still use cash basis of accounting which makes provision for minimal disclosures in relation to the needs of the public, bank, investors and creditors as well as expectations of the private sector (IFAC, 2012; Nkwagu, Uguru & Nkwede, 2016). Cash basis of accounting is an accounting method in which income is recorded when cash is received and expenses is recorded when payment is made. Whereas under the accrual basis of accounting, expenses are matched with revenues on the income statement, recognized when they are earned, rather than when the cash is received (Maduka, Aliu & Awheela, 2015).

IPSASs are the public sector driven form of the International Financial Reporting Standard (IFRSs) lay down by the International Accounting Standards Board (IASB) which defines its applications and stipulations targeted at enhancing accountability (Nkwagu, Uguru & Nkwede, 2016). Meanwhile, accountability as a variable (term) is the act of giving account of stewardship to the concerned parties, stakeholders and other interested users on how the resources that are being entrusted on one's hand were being effectively utilized for the purpose for which it was meant for. Accountability can also be seen to be responsible or answerable to people who gave their confidence, resources and trust to you for a purpose (Nkwagu, Uguru & Nkwede, 2016). Therefore, accountability is an obligation to unveil that responsibility has been performed in total adherence to the rules and standards and the officer reports fairly and accurately on performance and budget (Adegite, 2010).

2.1.2 IPSAS Adoption in Nigeria

The Federal Executive Council of Nigeria in July 2010 approved the adoption of the International Financial Reporting Standards (IFRS), and International Public Sector Accounting Standards (IPSAS), for the private and public sectors (Onwubuariri, 2012; Balogun, 2016). The adoption is aimed at improving the country's accounting and financial reporting system in consonance with global standards. Consequently, the Federation Account Allocation Committee, (FAAC), in June 2011 set up a sub-committee to work out a roadmap for the adoption of IPSAS in the three tiers of government. However, he noted that some stakeholders believe that the tools and strategies needed to fully implement IPSAS in the three tiers of government in Nigeria are still problematic (Balogun, 2016). He explained that IPSAS is a good development and an international best practice

which has been embraced in most developed countries. There is nothing wrong with Nigeria taking queue in making sure that public entities in the country fully adopt IPSAS.

2.1.3 Concept of Accountability and Transparency

According to Adegite (2010) accountability is defined as the obligation to demonstrate that work has been conducted in accordance with agreed rules and standards and the officers reports fairly and accurately on performance results vis-à-vis mandated roles and plans. Public accountability is an essential component for the functioning of our political system (Johnson, 2014).

UNDP cited in Egbunike, Onoja, Adeaga, and Utojuba (2017) categorized accountability into four segments:

1. **Financial accountability:** The obligation of anyone handling resources, public office or any other position of trust to report on the intended and actual use of the resources or of the designated office. This includes ensuring transparency in the process and procedures to achieve that obligation.
2. **Administrative accountability:** Includes critical systems of control internal to the government, which complements and ensures the proper functioning of checks and balances supplied by the constitutional government and an engaged citizenry. These include civil service standards and incentives, ethical codes, criminal penalties and administrative review.
3. **Political accountability:** This fundamentally begins with a free and transparent elections, is in effect starting point for oversight. In an electoral democracy, people have a regular, open method for sanctioning or rewarding those who hold positions of public trust. Through periodic elections and control mechanism, elected and appointed officials are held accountable for their actions while holding public office. Another mechanism to achieve more specific oversight is to have the three political branches (executive, legislative and the judiciary) watch over each other. In addition, separating the institution that raises and spends funds from that which actually executes the spending decision helps ensure that the underlying public interest is served.
4. **Social accountability:** A demand driven approach that relies on civic engagement and involves ordinary citizens and groups exacting greater accountability for public actions and outcomes.

IPSAS improves transparency and accountability in government entity's financial report (Chan, 2008). According to Ijeoma (2014) public sector accounting is a system or process which gathers, records, classifies and summarizes as reports the financial events existing in the public or government sector as financial statements and interprets as required by accountability and financial transparency to provide information to information users associated to public institutions. Hong Kong Society of Accountants (2004) associated the origin of corporate governance to the desire to improve transparency and accountability in financial reporting by listed companies to their shareholders. IPSAS seeks to improve the quality of general purpose financial reporting by public sector entities, leading to better informed assessments of the resource allocation decisions made by governments, thereby increasing transparency and accountability (Ijeoma, 2014).

2.3 Review of Empirical studies

Muraina, and Dandago (2020) investigated the effects of the implementation of the International Public Sector Accounting Standards (IPSAS) on Nigeria's financial reporting quality. Their study only explored two explanatory variables whereas other variables such as transparency, corruption minimization, comparability and faithful representation were not considered in the study. Their study employed a survey research design to determine the effects of the implementation of the IPSAS on Nigeria's financial reporting quality. Partial Least Square 3 (SmartPLS 3) technique of analysis was also applied to achieve their research objective. They found that accountability positively and significantly affects the quality of financial reporting in Nigeria.

Olaoye, and Talabi, (2018) examined the application of IPSAS on financial reporting in Nigeria public sector and its economic benefits. The descriptive research survey method was adopted in their work while the population comprises of Fifty (50) members drawn from ten (10) ministries randomly selected from all accounting departments of various ministries in Ado- Ekiti, the capital of Ekiti State, Nigeria. The primary source of data collection was employed through the use of questionnaire. The 4-point Likert scale was logically employed to quantitatively reflect order ranking while the mean scores of data analysis and Ordinary least square (OLS) were used. Their results showed that there is no relationship between application of IPSAS, financial reporting and its economic benefits to Nigeria. It was also observed that IPSAS has no significant relationship with ability of the government or financial reporting in reducing corruption in the public sector, though, their findings show positive relationship between IPSAS and credibility of financial reporting-using accrual basis of accounting.

Egbunike, Onoja, Adeaga, and Utojoba (2017) examined accountants' perception of IPSAS acceptance in Nigerian public sector financial management and reporting. Survey research design was adopted. Taro Yamane was used to determine the sample size of 283 from the population of 972 accountants. Data were obtained through the use of questionnaires administered on a sample size of 283 respondents from the offices of Accountant and Auditor General of Kogi and Benue States. Mean, standard deviation, line graph estimated marginal means and General Linear Model Univariate analysis were used to analyse the primary data via SPSS Version 20. The study revealed that the adoption of IPSAS will increase transparency and answerability in financial management and reporting of Nigerian Public Sector. Also that adoption and implementation of IPSAS will facilitate the quality of financial accounting reporting in the Nigerian Public Sector. Another finding is that the benefits of adoption of IPSAS override the costs in Nigerian Public Sector.

Abimbola, Kolawole, and Olufunke (2017) evaluated the impact of IPSAS on financial accountability of selected local governments of Oyo State, Nigeria. They examine the impact of IPSAS adoption on corruption reduction, transparency, and accountability in the selected Local Governments. The study adopted survey design. They collected data using five-point Likert-scale questionnaires administered on sample of 105 Accountants and Internal Auditors in the selected local governments of Oyo State Nigeria. The data were analysed using descriptive statistics. The hypotheses were tested using chi-square analysis at 5% level of significance. The result of the study showed that adoption of IPSAS increases the level of accountability, transparency and reduces corruption in the selected local governments.

Obara and Nangih (2017) examined the effects on IPSAS adoption on government reporting in Nigeria. Primary data were sourced amongst accountants and auditors of government ministries, departments and agencies within the Rivers State Civil Service. The data were presented using tables and charts. They were further analysed using simple percentages. The study revealed that IPSAS adoption will result in financial transparency/accountability, strengthened internal controls, boosts financial and resource stewardship and increased efficiency in decision making and good governance.

Dabor and Aggreh (2017) examined prospects and challenges of IPSAS adoption by the Nigerian public sector. The study focused on federal ministries in Abuja. One hundred and fifty copies of questionnaire were distributed to civil servants in Abuja. The study employed Z-test statistical technique and chi-square. Data gathered from field was analysed using MS-excel 2016. The result showed that adoption of IPSAS will increase the reliability of the reports prepared by Nigerian public sector. Also that adoption of IPSAS will enhance better comparability of financial report among various states. The study identified lack of funds and internal resistance as major challenges facing the adoption of IPSAS.

Nkwagu, Uguru & Nkwede, (2016) examined the implications of international public sector accounting standards on financial accountability in the Nigerian public sector: a study of south eastern states. Their study aims at determining the implications of IPSASs on accountability of Nigeria public sector with emphasis on its effects on efficient management of public funds, effective budget implementation, and checking of cases of corruption among public officers in the South Eastern states of Nigeria. The study which adopted survey design collected data using five-point Likert-scale questionnaire which was administered on sample of 314 out of 1458 Accountants and Internal Auditors in the ministries of finances of south Eastern states of Nigeria. Their data were analysed using descriptive statistics. Three hypotheses formulated were tested using one-way ANOVA model via Prism GraphPad at 5% level of significance. They found that IPSASs adoption enhances accountability in the Nigerian public sector as the standards pave way for improved management of public funds. Their findings further showed that application of IPSASs paves way for effective budget implementation and checks possible cases of corruption in the Nigerian public sector.

Ijeoma (2014) studied the impact of international public sector accounting standard (IPSAS) on reliability, credibility and integrity of financial reporting in state government administration in Nigeria. This study evaluated the impact of International Public Sector Accounting Standard (IPSAS) on reliability, credibility and integrity of financial reporting in State Government Administration in Nigeria. The purpose of this study is to ascertain the impact of International Public Sector Accounting Standard (IPSAS) on reliability, credibility and integrity of financial reporting in State Government administration in Nigeria. The findings of this study showed that implementation of IPSAS will improve the reliability, credibility and integrity of financial reporting in State Government administration in Nigeria. Equally, it was found that implementation of IPSAS can enhance Federal Government's goal to significantly deliver services more effectively and efficiently.

3.0 Methodology

The study adopts the *descriptive survey* research design based on the fact that the study seeks to carry out a qualitative enquiry. Survey design is one in which a group of people or items is studied by collecting and analysing data from only a few people or items considered to be representative of the entire group. It specifies how such data will be collected and analysed. This method is chosen for data collection, because it enables the researcher to solicit for information that might not be available on the pages of the text book. The population of this study was drawn from State and Local Government Public Offices' Finance and Treasury Departments in Anambra state, this include:

Table 3.1

S/No.	Name	Staff	Percentage%
1	Anambra Broadcasting Service (ABS)	10	7.14%
2	Anambra State Environmental Protection Agency	10	7.14%
3	Anambra State Agricultural Development Programme	10	7.14%
4	Anambra State Gaming Commission.	10	7.14%
5	Anambra State Judicial Service Commission.	10	7.14%
6	Anambra State Independent Electoral Commission	10	7.14%
7	Anambra State Library Board	10	7.14%
8	Anambra State Local Government Service Commission	10	7.14%
9	Anambra State Post-Primary School Service Commission	10	7.14%
10	Anambra State Rural Electrification Board	10	7.14%
11	Anambra State Tourism Board	10	7.14%
12	Anambra State Civil Service Commission	10	7.14%
13	Anambra State Inland Revenue Service (ASIR)	10	7.14%
14	Office of the Auditor-General, Anambra State.	10	7.14%
	TOTAL	140	100%

Source: Field work, 2021.

The number of respondents for the study was one hundred and forty (140) personnel with ten (10) in the various ministries and local government's finance and treasury departments.

Sampling is the process of selecting a subset (sample) of observation from among many possible observations, for the purpose of conclusions about that largest set of possible observations (Dibua, 2009). The study employed judgmental sampling in selecting respondents for the study. In

determining the sample size of this study, the Taro Yamane formula for determining a sample size from a finite population was used. The formula is stated below:

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

Where: n = sample size

N = population (401)

e =error Term (10% or 0.10)

1= constant

Therefore, $n = \frac{140}{1 + 140 (0.05)^2}$
 $n = 103.7$ (Approx. 104)

Data used in this study were obtained from Primary and Secondary data sources. Primary data refers to the statistical material, which the investigator originates for the purpose of the inquiry in hand. It could be collected through direct personal observation, indirect personal interview, information from correspondents, mailed questionnaires and questionnaires to be filled by the enumerators (Akindele, Nassar, & Owolabi, 2008). The primary data was collected through questionnaires directly administered to the respondents.

Validity is the extent to which an instrument measures what it intends to measure. Validity of the instrument is ensured through face, content and constructs validity. To ascertain the face and content validity of the instruments, the objective of the study, research questions, hypotheses and copies of the instruments were presented to two (2) experts in Accounting one (1) in Measurement and Evaluation all in Nnamdi Azikiwe University, Awka. The experts were requested to examine the items in terms of relevance of content, clarity of statements, suitability of the item to the level of the respondents and coverage of the dimensions of the study. They made some corrections which were incorporated into the final draft of the instrument.

Construct validity was carried out by subjecting the instrument to factor analysis with the use of SPSS version 23. This was done by giving out 100 item of questionnaire to employees of the sampled Public entities in Anambra States, Nigeria to ensure accuracy of the sampling adequacy; the result is as shown below:

Table 3.2:

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.861
Bartlett's Test of Sphericity	Approx. Chi-Square	989.266
	Df	12
	Sig.	.000

Source: SPSS Ver. 23.

Decision Rule: Measurement of Appropriateness of Facto Analysis

Interpretative adjectives for the Kaiser-Meyer – Olkin Measure of Sampling Adequacy are:

0.90 is labelled as marvellous

0.80 is labelled as meritorious
 0.70 is labelled as middling
 0.60 is labelled as mediocre
 0.50 is labelled as unacceptable

The value of the KMO measure of sampling Adequacy for this set of variables is 0.861 which would be labelled meritorious: since the KMO measure of sampling adequacy meets the minimum criteria, we do not have a problem that requires us to examine the Anti-Merge correlation matrix. Therefore, the instrument is deemed to be valid.

Reliability of a particular instrument measures the consistency of the instrument used by the researcher. In order to ensure the reliability of the questionnaire, 30 copies of the instruments were administered to 30 employees (15 males and 15 females) randomly selected from three Public entities in Enugu State. Enugu State was chosen for the reliability test because it has similar characteristics with the area of the study. The scores of the respondents were subjected to statistical analysis to determine the internal consistency of the items of the questionnaire. This was done using Cronbach Alpha. The choice of Cronbach Alpha was in line with Howith and Craner (2011) who recommended Cronbach Alpha as a statistical tool for determining internal consistency of a research instrument. The reliability statistics for the study is given below:

Table 3.3a: Reliability Statistics for Transparency

Reliability Statistics	
Cronbach's Alpha	N of Items
.898	5

Source: SPSS, Ver. 23

Table 3.3a showed The Cronbach's alpha on the test of measurement reliability scale for effect of IPSAS on the transparency of Public entities in Nigeria which reveals an alpha level of .898 which is above the generally accepted threshold of .70. Thus, the measurement is reliable.

Table 3.3b: Reliability Statistics for Reliability

Reliability Statistics	
Cronbach's Alpha	N of Items
.709	4

Source: SPSS, Ver. 23

Table 3.3b showed The Cronbach's alpha on the test of measurement reliability scale for effect of IPSAS on the financial statement reliability of Public entities in Nigeria which reveals an alpha level of .709 which is above the generally accepted threshold of .70. Thus, the measurement is reliable.

Table 3.3c: Reliability Statistics for Credibility

Reliability Statistics	
Cronbach's Alpha	N of Items
.832	3

Source: SPSS, Ver. 23

Table 3.3c showed The Cronbach’s alpha on the test of measurement reliability scale for effect of IPSAS on the credibility of Public entities in Nigeria which reveals an alpha level of .832 which is above the generally accepted threshold of .70. Thus, the measurement is reliable.

One Sample Mean T-test was utilized for the analyses of the two hypotheses formulated in this study, using the SPSS Statistical software IBM 23. The Statistical Package for Social Sciences (SPSS) has been deployed to pave more room for credibility of results obtained in this work through the analysis, leaving no room for error or doubt that is usually common in the manual approach. The hypotheses will be tested at .05 significance level.

4. Data Presentation and Analysis

The data presentation and description were guided by the researcher’s questions, which were first stated, after which the data collected with regard to each of the questions were analysed. One hundred and four (104) questionnaires were distributed to the respondents and the entire number was duly filled and submitted. Thus, the researcher used the 104 (100%) questionnaires for the analysis. The primary data derived from the structured questionnaire can be seen in Appendix I. Below is the descriptive statistic of the data

4.2.1 Bio-data of respondents:

Table 4.2.1a

		Sex			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	46	44.2	44.2	44.2
	Male	58	55.8	55.8	100.0
Total		104	100.0	100.0	

Source: SPSS ver. 23

The table above shows that 46 respondents are females (i.e. 44.2%), while 58 persons are males (i.e. 55.8%)

Table 4.2.1b

		Age Bracket			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	30-35	14	13.5	13.5	13.5
	36-40	33	31.7	31.7	45.2
	41-45	21	20.2	20.2	65.4
	46- Above	36	34.6	34.6	100.0
Total		104	100.0	100.0	

Source: SPSS ver. 23

From the table above, the number of participants between the ages of 30 to 35 years of age is 14 (13.5%), participants between the ages of 36 to 40 years of age is 33 (31.7%), participants between the ages of 41 to 45 years of age is 21 (20.2%), While participants 46 years of age and above is 36 (34.6%).

Table 4.2.1c

		Years of Experience			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-5	16	15.4	15.4	15.4
	6-10	28	26.9	26.9	42.3
	11-15	16	15.4	15.4	57.7
	16- Above	44	42.3	42.3	100.0
	Total	104	100.0	100.0	

Source: SPSS ver. 23

From the table above, Years of service showed that 16 respondents (ie. 15.4%) have between 0 to 5 years in service, 28 respondents (ie. 26.9%) have 6 to 10 years in service, 16 respondents (ie. 15.4%) have 11 to 15 years in service while 44 respondents (ie. 42.3%) have 16 years in service and above. This is an indication that a good percentage of respondents have stayed long on the job making easy to give a valid opinion on the subject matter.

Table 4.2.1d

		Employment Category			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Senior Staff	24	23.1	23.1	23.1
	Junior Staff	80	76.9	76.9	100.0
	Total	104	100.0	100.0	

Source: SPSS ver. 23

From Table 4.2.1d above, 80 respondents (ie. 76.9%) are Junior Staff/employees while only 24 respondents (23.1%) are Senior Staff/employees.

4.2.2 Descriptive Statistics of Primary Data

Table 4.2.2

	Descriptive Statistics								
	Count	Min	Max	Mean	Std. Deviation	Skewness	Kurtosis		
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Z-Scores	104	-5.53	2.79	.0000	2.86375	-.433	.237	-1.387	.469
Transparency	104	8.00	25.00	18.7596	6.57665	-.337	.237	-1.635	.469
Reliability	104	7.00	20.00	16.4038	3.90548	-.580	.237	-1.112	.469
Credibility	104	4.00	15.00	11.4038	3.91789	-.486	.237	-1.354	.469
Valid N (listwise)	104								

Source: SPSS ver. 23

Kumar and Puja (2012) stated that if the value of skewness and kurtosis are 0 and 3 respectively, the observed distribution is said to be normally distributed but if the skewness coefficient is in excess of unity, it is considered fairly extreme and the low (high) kurtosis value indicates extreme platykurtic (extreme leptokurtic). None of the variables has a skewness value that is in excess of unity and this indicates that the variables are normally distributed.

The table thus shows that on average, had positive response score of 18.7596, 16.4038 and 11.4038; which indicates a relatively sound response of establishment. The standard deviation of 6.57665, 3.90548 and 3.91789 indicates a high variability on the degree of effect among sampled parastatals in Nigeria. This is confirmed by the wide range between the maximum and minimum Z-score of 2.79 and -5.53 respectively.

4.3.1: Investigative Question One

Table 4.1: Investigative questions on the effect of IPSAS adoption on transparency of government establishment

Transparency	SD	D	UD	A	SA	N	Sum	Mean	Remark
The adoption of a uniform global standard (IPSAS) would enhance disclosure of government financial information	18	9	13	3	61	104	392	3.77	Accept
The accounting framework of IPSAS strengthens domestic confidence in public sector financial management	12	15	17	7	53	104	386	3.71	Accept
Implementation of IPSASs will put Nigeria on the same accounting pedestal as several other countries of the world	17	17	14	7	49	104	366	3.52	Accept
IPSAS enshrines transparency and accountability within government accounting framework	22	14	3	3	62	104	381	3.66	Accept
The implementation of IPSAS enables stakeholders examine whether resources are being used effectively and efficiently	4	21	4	7	68	104	426	4.10	Accept
Valid N (listwise)						104			

Source: Field Survey, 2021.

Table 4.1 shows an acceptance remark for all statements in response to investigative questions on the effect of IPSAS adoption on transparency of government establishment and a grand mean of 3.752 which is above the decision threshold of 3.0.

4.3.2: Investigative Question Two

Table 4.2: Investigative questions on the effect of IPSAS adoption on reliability of government establishment

Reliability	SD	D	UD	A	SA	N	Sum	Mean	Remark
IPSAS compliant financial information can be relied upon for decision making	2	3	5	1	93	104	492	4.73	Accept
The adoption of IPSAS will promote comparability of financial statements	4	21	4	7	68	104	426	4.10	Accept
IPSAS provides a framework for verifiability of accounting information	15	9	16	2	62	104	399	3.84	Accept
The adoption of IPSASs provides a mechanism for efficient internal controls	12	13	19	6	54	104	389	3.74	Accept
Valid N (listwise)						104			

Source: Field Survey, 2021.

Table 4.2 shows an acceptance remark for all statements in response to investigative questions on the effect of IPSAS adoption on credibility of government establishment and a grand mean of 4.103 which is above the decision threshold of 3.0.

4.3.3: Investigative Question Three

Table 4.3: Investigative questions on the effect of IPSAS adoption on credibility of government establishment

	SD	D	UD	A	SA	N	Sum	Mean	Remark
IPSAS reduces material error and subjectivism in government accounting system	12	17	19	6	50	104	377	3.63	Accept
IPSAS increases trust in governments' financial statements and help restore confidence in their ability to manage their fiscal balances	18	14	8	2	62	104	388	3.73	Accept
IPSAS provides a faithful representation of receipts or payments, as the economic consequences of each transaction are juxtaposed	4	21	7	6	66	104	421	4.05	Accept
Valid N (listwise)						104			

Source: Field Survey, 2021.

Table 4.3 shows an acceptance remark for all statements in response to investigative questions on the effect of IPSAS adoption on credibility of government establishment and a grand mean of 3.803 which is above the decision threshold of 3.0.

4.4 Test of Hypothesis

4.4.1 Hypotheses testing one:

H₀₁: There is no significant effect of IPSAS adoption on transparency of government establishment.

Table 4.4.1a

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Transparency	104	18.7596	6.57665	.64489
Zscore (Transparency)	104	.0000000	1.00000000	.09805807

Table 4.4.1b

One-Sample Test						
Test Value = 0.5						
	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Transparency	28.314	103	.000	18.25962	16.9806	19.5386
Zscore(Transparency)	-5.099	103	.000	-	-	-
				.50000000	.6944750	.3055250

Source: SPSS ver. 23

Table 4.4.1a-b above Sample T-test for the effect of IPSAS adoption on transparency of government establishment. Our result revealed a strong positive correlation between transparency and performance of government establishment, our result in table 4.4.1b revealed p-value of approximately .000 at 0.05 significance level, thus we reject the null hypotheses and conclude that There is a significant effect of IPSAS adoption on transparency of government establishment in Nigeria.

4.4.2 Hypotheses testing two:

H₀₂: There is no significant effect of IPSAS adoption on reliability of government establishment.

Table 4.4.2a

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Reliability	104	16.4038	3.90548	.38296
Zscore (Reliability)	104	.0000000	1.0000000	.09805807

Table 4.4.2b

One-Sample Test						
Test Value = 0.5						
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Reliability	41.528	103	.000	15.90385	15.1443	16.6634
Zscore(Reliability)	-5.099	103	.000	-	-	-.3055250
				.50000000	.6944750	

Source: SPSS ver. 23

Table 4.4.2a-b above Sample T-test for the effect of IPSAS adoption on transparency of government establishment. Our result revealed a strong positive correlation between reliability and performance of government establishment, our result in table 4.4.2b revealed p-value of approximately .000 at 0.05 significance level, thus we reject the null hypotheses and conclude that There is a significant effect of IPSAS adoption on reliability of government establishment in Nigeria.

4.4.3 Hypotheses Testing Three:

H₀₃: There is no significant effect of IPSAS adoption on credibility of government establishment.

Table 4.4.3a

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Credibility	104	11.4038	3.91789	.38418
Zscore (Credibility)	104	.0000000	1.0000000	.09805807

Table 4.4.3b

One-Sample Test						
Test Value = 0.5						
	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Credibility	28.382	103	.000	10.90385	10.1419	11.6658
Zscore(Credibility)	-5.099	103	.000	-	-	-.3055250
				.50000000	.6944750	

Source: SPSS ver. 23.

Table 4.4.3a-b above Sample T-test for the effect of IPSAS adoption on transparency of government establishment. Our result revealed a strong positive correlation between reliability and performance of government establishment, our result in table 4.4.3b revealed p-value of approximately .000 at 0.05 significance level, thus we reject the null hypotheses and conclude that There is a significant effect of IPSAS adoption on credibility of government establishment in Nigeria.

5. Conclusion and Recommendations

This study examined the stimulus of International Public Sector Accounting Standard (IPSAS) and reporting entities in Anambra State. The current study established that there is a positive statistically significant association between of IPSAS and the reliability and credibility of Public entities reporting in Anambra State, Nigeria. Although, some studies revealed a negative relationship between them and very few showed a mixed result. The results of these studies varied due to various reasons, i.e., types of data, variables, statistical techniques, etc. Based on the findings of this study, the following recommendations are here given:

1. In other to ensure accountability, transparency, credibility and comparability of financial information targeted at eradicating corruption in the Nigerian public sector, it is highly recommended that government establishments are made to follow strictly, the standards and stiff punishment for any non-compliant establishment.
2. Verifiable quantitative research in this area is relatively scarce and given the importance of IPSAS to accountability and credibility of the Nigerian Public Sector, researches on IPSAS and other incidental issues should receive high attention from academic researches studies of empirical nature.

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CORPORATE GOVERNANCE AND FIRM VALUE: IS POOR CORPORATE GOVERNANCE RESPONSIBLE FOR THE PERSISTENT CRISES IN NIGERIA BANKING SECTOR?

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Abstract

This paper investigated the relationship between corporate governance and firm value of Nigerian banks using the quantitative research design. The study adopted a similar model used by Haat, et al. (2008) and Hamad, et al. (2021) to estimate the combined effects of corporate governance proxies (board size, board composition, firm ownership structure financial disclosure and transparency and composition of audit committee) on firm value measures (net assets per share, dividend per share and return on investments) of eight selected commercial banks. The data was collected from the published financial reports of the selected banks for the year 2010 to 2020. Data obtained was analysed using descriptive and inferential statistics (Ordinary Least Squares-OLS-regression) via the Statistical Package for Social Sciences. Findings indicated that corporate governance proxies have significant effect on the return on investment, dividend per share and net assets per share of the selected banks in Nigeria. The paper recommends that all the stakeholders involved in monitoring the institutionalization of an effective system of corporate governance in Nigeria banks should do more to ensure that bank directors adhere to good and transparent corporate governance to reverse the continuous trend of bank failures in Nigeria in order to enhance the value of the firm.

Key words: *Corporate governance; Firm value; Dividends per share; Return on investment; Net Assets per shares*

1. INTRODUCTION

The directors and managers of any company are agents of the shareholders and must carry out their operations to satisfy the interest of the shareholders. These managers and shareholders are mandated to carry out the operations of the company ethically and transparently within the provisions of laws and regulations governing the operations of companies in the country and globally. These managers and directors must endeavour to run the company successfully, increase

the value of the company and bring in profit for the shareholders; this is where corporate governance comes in. Corporate governance aims at protecting the interests of the shareholders, preserve the company's reputation and shields the company from monumental fraud by its agents (Rahman & Nugrahanti 2021; Uddin, Hosen & Chowdhury, 2021).

Over the years several researches (El-Deeb, Halim & Elbayoumi, 2021; Kurniansyah, Saraswati & Rahman, 2021; Danoshana & Ravivathani, 2019; Ararat, Black & Yurtoglu, 2017; and Black, Kim, Jang & Park, 2015) have been done in the area of corporate governance and firm value; however, majority of these studies were predominant the developed countries. In these sets of studies, it was discovered that good corporate governance is pivotal for any company's success and bad corporate governance could herald crises in companies.

In the last one decade and half, Nigeria banks have been going through one crises or the other. From the failures of Halmark, All States, Savanah, Oceanic, Intercontinental, and more recently, Diamond, Bank PHB, and Equatorial trust banks, among others. A closer look at the crises in these banks showed that insider dealings and non-performing loans were key to their failure and crises. This begs the questions: why are crises in Nigeria banks continuing despite concerted efforts by the Central Bank of Nigeria (CBN) to revitalize and recapitalize these banks? Could this also be as a result of poor corporate governance? Is corporate governance responsible for the failure or success of Nigeria banks?

Interestingly, with the persisting crises popping up in the Nigeria banking sector, one would have expected to see recent studies in Nigeria investigating why these banks continue to fail and the present role of corporate governance in mitigating the crises. However, the opposite is the case.

Most studies in Nigeria in the area of corporate governance and firm value are over a decade old and these calls for updating of literature. It is based on these research problems and desire to fill the identified gaps that this study attempted to investigate empirically corporate governance and firm value in Nigeria banking sector. Consequently, this study seeks to investigate the following specific objectives:

1. To examine the relevance of corporate governance on returns on investments of Nigerian banks;
2. To assess the value-relevance of corporate governance on dividend per share of Nigerian banks; and
3. To determine the importance of corporate governance on net assets per share of Nigerian banks.

2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Literature Review

This sub-section consists of brief literatures in the areas of corporate governance and firm value.

2.1.1 Corporate Governance and its Relevance

Corporate governance refers to how firms are managed, that is, how the resources of a firm are employed in the pursuit of the set goals of the organization (Chiejien, 2010). It includes transparency, independence, accountability, fairness, corporate social responsibility, timely and accurate disclosure of information and corporate discipline. Good corporate governance is expected to regulate the relationship and interconnectivity amongst shareholders, board of directors and management (Hassan, 2010; Murinda, Islahuddin & Nuraini, 2021).

Good corporate governance should be preoccupied with giving direction to the firm, in terms of its operations, resource derivation and resource allocation. It ensures transparency in the operations of the firm. The relevance of corporate governance is usually judged from its contribution to economic growth and efficient utilization of resources. Other concrete relevance of corporate governance should include:

- (a) Enhanced accessibility to external fiancé: According to Claessens (2003), better creditor and shareholder rights are seen to be related with in-depth and better developed banking and capital markets.
- (b) Influences firm value positively: This attracts investors and attracts lower cost of capital, as well as leads to higher growth and employment opportunities.
- (c) Promotes optimal and efficient allocation of resources and better firm operations.
- (d) Acts as a shock absorber in times of economic crises, thereby reducing and mitigating risks, and promoting the firm's reputation.
- (e) Creates better relations amongst various stakeholders.

2.1.2 Firm Value and its Characteristics

Firm value or total enterprise value is the economic measure reflecting the market value of a business. It reflects the value of a business at a given date. Theoretically, it is the amount that an individual or firm would be willing to pay to buy or to take over a business entity and can be determined on the basis of either book value or market value (Kurniansyah, et al. 2021). However, market value is commonly used in determining the value of a business. It is the sum of claims by all claimants. These claimants include creditors (secured and unsecured creditors), and shareholders (preference shareholders and ordinary shareholders).

Varying findings from different authors in most studies related to factors influencing firm value have been reviewed. For instance, Anabestani and Shourvarzi (2014) discovered that profitability negatively affects firm value. Antounian, Dah and Harakeh (2021) found profitability to positively influence firm value. Similarly, the findings of Danoshana and Ravivathani (2019) showed that leverage is positively related to firm value; the findings of El-Deeb, et al. (2021) found that size of the firm is positively connected to firm value, while Garay and Gonzalez (2008) indicated that size of the firm has negative relationship with firm value.

2.2 Theoretical Framework

This paper is hinged on the stakeholder theory and obtained support from agency theory. The stakeholder theory is a capitalism postulation that emphasizes the interrelated relationships existing between a business and its various stakeholders such as customers, suppliers, employees, investors, communities, etc. The theory states that managers of businesses must of necessity take into consideration the needs of all stakeholders and that these constituents impact its operations and is impacted by its operations (Lemmon & Lins, 2003). The theory postulates that a business must seek to maximize value for its stakeholders. It takes into cognizance both economical and ethical considerations, while promoting fairness for everyone involved in the company and gives the managers clear objective (Herbert, et al., 2021; and Islam, et al., 2021).

Despite its seeming importance, many scholars such as Haat, Ralman and Mahenthiran (2008) and Hamad, Saeed and Sharif (2021) have criticized the stakeholder theory. They argued that the theory lacks specificity and as such cannot be operationalized in a way that allows scientific observation. They pointed out that it can be difficult to consider the differing interests of various stakeholders. Some feel that the theory offers no decision-making standard that could provide a benchmark for

governance. Others argued that the stakeholder theory is vacuous and unrealistic of the actual operations of organizations.

This study hinges on the stakeholder theory that bank managers and directors in Nigeria are in those banks for the interest and reward of stakeholders and not for their own personal interest. The study further found support from the agency relationship theory which was first pointed out by Jensen and Meorching (1976) as a contract under which one or more persons {the principal (s)} engage another person (the agent) to perform some services on their behalf. Here, the shareholders (owners/principal) of the firm hire the agents (managers and directors) to oversee the activities of the firm.

3. METHODOLOGY

The scope of the study covers the 2010 to 2020 accounting years of the selected banks. The study is a quantitative research. It employed descriptive research design. The population of the study consists of the 23 commercial banks listed on the floor of the Nigeria Stock Exchange (NSE) as at December, 2020. However the sampled banks comprised of 8 banks with international authorization in Nigeria as at December, 2020 representing about 35% of the population. These include Access Bank Plc., Fidelity Bank Plc., First City Monument Bank Plc., First Bank of Nigeria Plc., Guaranty Trust Bank Plc., Union Bank of Nigeria Plc., United Bank for Africa Plc., and Zenith Bank Plc.

These were purposefully sampled because these banks are incorporated and also subject to all International Financial Reporting Standard (IFRS) and International Accounting Standard (IAS) provisions and other local and international disclosures and transparency requirements due to their global operations and presence. The study made use of secondary data collected from the fact book

of the NSE and websites of the selected banks. Data collected was for both corporate governance and firm value variables. The data collected was analysed using both descriptive and inferential statistics (Ordinary Least Squares) via the Statistical Package for Social Sciences (SPSS).

The multi-regression analysis was carried out to establish whether the sets of independent variables (firm ownership structure, board size, board composition, financial disclosure and transparency, and composition of audit committee) explained the proportion of the variance in the dependent variables (firm value - return on investment, dividends per share, and net assets per share). The study adopted a similar model used by Haat, et al. (2008) and Hamad, et al. (2021) to estimate the combined effects of corporate governance proxies on firm value. The corporate governance measures are estimated as a function of the banks' firm value indicators as shown in equations i-iii:

$$ROI_{it} = \beta_0 + \beta_1 FOS_{it} + \beta_2 BOS_{it} + \beta_3 BOC_{it} + \beta_4 FDT_{it} + \beta_5 CAC_{it} + e_{it} \dots \dots \dots (i)$$

$$DPS_{it} = \beta_0 + \beta_1 FOS_{it} + \beta_2 BOS_{it} + \beta_3 BOC_{it} + \beta_4 FDT_{it} + \beta_5 CAC_{it} + e_{it} \dots \dots \dots (ii)$$

$$NPS_{it} = \beta_0 + \beta_1 FOS_{it} + \beta_2 BOS_{it} + \beta_3 BOC_{it} + \beta_4 FDT_{it} + \beta_5 CAC_{it} + e_{it} \dots \dots \dots (iii)$$

Where: ROI = return on investment; DPS = Dividend per share; NPS = Net Assets per share; FOS = Firm Ownership Structure; BOS = Board Size; BOC = Board Composition; FDT = Financial Disclosure and Transparency; CAC = Composition of Audit Committee; β_0 = Constant β_1 to β_5 = Parameters to be estimated; e = error term; and it = individual banks;

4. RESULTS AND DISCUSSIONS

This section dealt with the presentation, interpretation, as well as the discussion of results. The main objective of this paper was to investigate the relationship between corporate governance and firm value of Nigeria banks. The results would provide information on the descriptive and inferential statistics used in analysing the formulated hypotheses.

Table 1 : Descriptive Statistics

Variables	FOS	BOS	BOC	FDT	CAC	ROI	DPS	NPS
Mean	12	0.67	0.39	8.8	0.04	27.9	11	0.62
Standard Deviation	1.20	16.20	0.09	0.21	0.41	31.62	24.56	1.09
Kurtosis	0.42	-0.57	-1.10	12.02	-0.34	8.09	28.8	8.89
Skewness	0.935	-1.08	-0.92	3.64	1.34	-1.75	6.00	3.65
Maximum	14	0.75	0.62	60.32	0.09	89.67	151.04	5.88
Minimum	10	0.58	0.46	0.70	0.04	-89.63	-8.22	0.04
Count	26	26	26	26	26	26	26	26

Source: Field Investigation (2021)

Table 1 shows that the mean figures of DPS, ROCE, and NAPS of the sampled banks are 27.9, 11, and 0.62 respectively. While firm ownership structure, board size, board composition, financial disclosure and transparency, and composition of audit committee have a mean of about, 0.67, 0.39, 8.8, 0.04 and 12 members respectively. Board size has the highest standard deviation of 16.20 signifying its low contribution, whereas Firm Ownership Structure (FOS), Board Composition (BOC), Financial Disclosure and Transparency (FDT) and Composition of Audit Committee (CAC) have lower standard deviation which indicates their significant contribution.

The composition of the audit committee falls between 38 to 51 percent which is not in line with requirement of CAMA 1990, now amended in 2020, that the representation of shareholders on the committee should be three whereas the whole committee should be six. During the period of the study, Fidelity bank had ratio 2 directors to 4 shareholders. Likewise Union Bank Plc for the first 4 years the ratio of the Audit Committee Composition was 2:4.

Table 3: Regression Results on Corporate Governance and ROI

Variables	Coefficients	t-values
Intercept	12.634	1.433
FOS	-11.512	-1.856*
BOS	-16.321	-2.951**
BOC	-10.991	-3.261**
FDT	0.443	0.431
CAC	0.862	3.121**
R ²	0.82	
Adjusted R ²	0.71	
F-Stat	5.865**	
Durbin-Watson	1.334	

Source: Field Investigation (2021)

The symbol ***, **, * indicates statistical significance at 1%, 5% and 10% respectively.

Table 3 relates DPS (dependent variable) to corporate governance variables (independent variable). The estimated regression relationship for *DPS* model is: **$ROI = 11.544 - 10.703FOS - 17.460BOS - 11.440BOC + 0.310FDT + 0.959 CAC$** . The equation shows that the independent variables have significant impact on the ROI while board size is negatively related and statistically significance at 10%, board composition and composition of audit committees have negative relationship with the dependent variable at 5% significant level. This signifies that an increase in these variables would lead to decrease in ROI.

The adjusted coefficient of determination (R²) offers better explanation of the variations in ROI as the value is about 65 percent. Also, the value of the F-statistics is 5.865 with a *p*-value of 0.001, showing fitness of the model. From the result, the null hypothesis can be rejected. In other words, the result provides evidence that corporate governance of firms in Nigerian banks has significant impact on the firm value as measured by their return on investment.

Table 4: Regression Results on Corporate Governance and DPS

Variables	Coefficients	t-values
Intercept	11.543	1.678
FOS	-9.743	-2.398**
BOS	-17.980	-5.238**
BOC	-11.775	-4.987**
FDT	0.385	1.901*
CAC	0.812	6.845***
R ²	0.875	
Adjusted R ²	0.734	
F-Stat	8.988**	
Durbin-Watson	1.185	

Source: Field Investigation (2021)

The symbol ***, **, * indicates statistical significance at 1%, 5% and 10% respectively.

Table 4 relates DPS (dependent variable) to corporate governance variables (independent variable). The estimated regression relationship for *DPS* model is: $DPS = 10.407 - 9.997FOS - 16.467BOS - 10.884BOC + 0.294FDT + 0.903 CAC$. The equation shows that the independent variables have significant impact on the dividend per share as a proxy for firm value. The results showed that ownership structure (FOS), board size (BOS), board composition (BOC) have negative relationship with the dependent variable at 5% respectively. This signifies that decrease in these variables would lead to an increase in dependent variable.

Furthermore, financial disclosure and transparency (FDT) and composition of audit committee (CAC) are positively related with DPS. While financial disclosure and transparency has significant relationship at 1%, composition of audit committees is at 10%. That is, increase in the level of financial disclosure and transparency, and composition of audit committee increase in DPS of banks in Nigeria. Durbin Watson statistics of 1.195 shows absence of auto correlation. The adjusted coefficient of determination (R²) of approximately 73% offers better explanation of the variations in DPS occasioned by variation in the independent (CG) variables. Also, the value of the F-statistics is 8.988 with a *p*-value of 0.002, indicates fitness of the model.

From the result, the null hypothesis can be rejected. In other words, the result provides evidence that corporate governance of banks in Nigeria has significant impact on their value as measured by their DPS. The result however, did not support the findings of Ararat, et al. (2017), Black, et al. (2015) and Chhaochharia and Grinstein (2007).

Table 5: Regression Results on Corporate Governance and NPS

Variables	Coefficients	t-values
Intercept	27.567	2.875***
FOS	-0.701	-2.321**
BOS	-21.825	-5.021***
BOC	-19.946	-4.983***
FDT	0.024	1.772*
CAC	50.123	8.332***
R ²	0.907	
Adjusted R ²	0.834	
F-Stat	15.223***	
Durbin-Watson	1.121	

Source: Field Investigation (2021)

The symbol ***, **, * indicates statistical significance at 1%, 5% and 10% respectively.

Table 5 relates NAP (dependent variable) to corporate governance variables (independent variable). The estimated regression relationship for NPS model is; $NAPS = 28.689 - 0.009FOS - 23.999BOS - 21.634BOC + 0.017FDT + 45.278 CAC$. The equation shows that firm ownership structure (FOS), board size (BOS) and board composition (BOC) have negative relation with the NPS at 5% level of significance respectively. This signifies that decrease in these variables would lead to an increase in NPS. Financial disclosure and transparency (FDT) and composition of audit committee (CAC) are positively related with NPS. While financial disclosure and transparency has statistically significant relationship at 1%, composition of audit committee is at 10%. This implies that, increase in the level of composition of audit committee guarantee increase in the firm value of the banks in Nigeria.

The adjusted coefficient of determination (R^2) offers better explanation of the variations in NPS as the value is about 83 percent. Also, the value of the F-statistics is 15.223 with a p -value of 0.002, this shows the fitness of the model. From the result, the null hypothesis can be rejected. In other words, the result provides evidence that corporate governance of firms in Nigeria banks has significant impact on the firm value as measured by their NPS.

The results of the study have provided insight into the predictor variables that have important impact in explaining the dependent variable (firm value) of banks in Nigeria. The results indicate that corporate governance has significant effect on the dividend per share of banks in Nigeria and financial disclosure and transparency (FDT) and composition of audit committee (CAC) are important variables that can be used to explain firm value of banks in Nigeria. The important feature of this finding is that the firm value can be controlled by manipulating financial disclosure and transparency, and composition of audit committee.

In addition, the results indicate that corporate governance has significant effect on the Return on investment, dividends per share and net assets per share of banks in Nigeria. Adequate disclosure with robust transparency increases the chances of having good performance and ensuring appropriate business and financial decision making. Also composition of audit committee affects firm value, as the presence of the shareholders' representative in the audit committee would ensure that the work of the audit committee is effective and without bias.

5. CONCLUSION AND RECOMMENDATION

From the findings, we can conclude that corporate governance influences the performance of banks in Nigeria. The firm ownership structure could affect the dividends per share paid out to shareholders, the returns on investment and the net assets per share. The presence of shareholders or their representatives in the audit committee has critical consequence on the work of the audit committee and this would further ensure proper audit work and enhance corporate performance.

A very fundamental propeller of shareholders value that ensures the going concern of the banks is financial disclosure and transparency. Evidence has shown that inadequate disclosure and insufficient transparency are the reasons for insider dealings that have led to monumental non-performing loans of Nigeria banks. Overall, the study established and contributes to knowledge indicating that poor corporate governance is responsible for the persistent crises in the Nigerian banking sector. In line with the findings, the paper recommends as follows:

1. There should be cordial interrelationship between the boards of the banks, the management and the shareholders through continuous consultations and carrying everyone along.
2. The government and regulators such as the CBN should have zero tolerance for below standard corporate governance practices by Nigeria banks. The central bank should be above board and transparent in dealings with the banks to ensure that all stakeholders' interests in the Nigeria banking sector are consistently protected.

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IMPLICATIONS OF CLIMATE CHANGE ON SOIL FUNCTIONS: A CASE FOR ACHIEVING LOCAL COCONUT SUFFICIENCY FROM SUSTAINABLE AGRICULTURAL PRACTICES

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Abstract

Climate change is a major threat to agricultural food production globally and locally. It poses both direct and indirect effects on soil functions. Thus, agricultural management practices has evolved to adaptation strategies in order to mitigate the risks and threats from climate change. The study concludes with a recommendation the coconut farmers should explore the idea of soil biodiversity in a bid to mitigate the potential negative impact of climate related risk on the farming. The study proffers the need for adopting sustainable agricultural practices to boost local coconut production. This can contribute to the simultaneous realisation of two of the Sustainable Development Goals (SDGs) of the United Nations: SDG 2 on food security and sustainable agriculture and SDG 13 on action to combat climate change and its impacts. The study findings has implications for tackling climate change in Sub-Saharan Africa and in particular Nigeria in order to boost local agricultural production and coconut in particular without negative environmental consequences and an ability to cope with climate change related risks.

Keywords: Climate Change, Soil, Sustainable Development Goals (SDGs)

1.0 Introduction

Soil is the uppermost layer of the earth's crust vital to the well-functioning of plants and plays a key role to the realisation of the Sustainable Development Goals (SDGs) (Keesstra et al., 2016; Montanarella & Alva, 2015; Sposito, 2021). Montanarella and Alva (2015) identified soil functions as specifically relevant for three out of the 17 SDGs, namely: SDG 2 (End hunger, achieve food security and improved nutrition and promote sustainable agriculture), 13 (Take urgent action to combat climate change and its impacts), and 15 (Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification and halt and reverse land degradation and halt biodiversity loss). Soil refers to 'the biologically active and porous medium', composed of different mineralogy, organic matter, organisms, gas, and water (Sposito, 2021). Soil texture as 'the proportion of sand, silt and clay sized particles that make up the mineral fraction of the soil' (The Queensland Government, 2021). Soil systems have a multifarious benefits such as providing a habitat for organisms, biodiversity, biomass production, carbon sequestration, and a source of cultural and recreational space, etc. (Coyle et al., 2016; Hamidov et al., 2018; Montanarella, 2015; Tóth et al., 2013).

Climate change has become a subject of public discourse at the local and international scene (Bonfante et al., 2017; Hamidov et al., 2018). Countries such as the United States, Spain, Turkey, Israel, and Haiti have fallen under the scourge of climate change in recent times. This is a clear

indication that no country bears immunity against ‘extreme weather events’, whether developed or developing. International organisations (e.g., UN, UNICEF), publics, state governments, NGOs and civil society organisations (e.g., Alexander von Humboldt Foundation) have made attempts at tackling this global menace. This includes the Paris Climate Accords and the Kyoto Protocol, among others. Recently, it was included as one of the 17 Sustainable Development Goals of the UN (specifically, the SDG 13). Also commonly referred to as global warming, issues such as greenhouse gas emissions (GHG) have increased atmospheric temperature over decades. This has led to atmospheric reactions such as extreme rainfall, thunderous storms, droughts, and coastal flooding (Hamidov et al., 2018). It has also been attributed as a cause of respiratory disorders (such as asthma); infectious diseases (e.g., water borne), and mental health, such as ‘post-traumatic stress disorder’ associated with natural disaster occurrence. This are but few examples from a myriad of other disturbing concerns which are the outcome of climate change.

The impact of climate change have not left the soil untouched. As stated in Hamidov et al. (2018), climate change impacts the soil directly and indirectly. The direct effects includes such as temperature, precipitation, and moisture regime changes. Indirect effects include those that are induced by adaptations such as irrigation, crop rotation changes, and tillage practices (Hamidov et al., 2018). The negative consequence of climate change poses a threat to soil functions from increased soil erosion, compaction, and eroding soil fertility (Lal et al., 2011). The effect has been a reduction in agricultural productivity and lowering food security globally (Hamidov et al., 2018; Lal et al., 2011). Climate and edaphic changes are prime determinants of agricultural productivity (Zhao et al., 2018). To achieve sustainable food production there is a need to mitigate the effects of soil erosion and nitrogen leaching from climate change and intense human activity (Qiao et al., 2018). The changes in soil properties have implications on soil functions such as the soil water retention, biomass transport, and plant growth (Ascough et al., 2019). The soil is a key resource in ensuring agricultural productivity, sustaining future generations and maintain sustainable food production.

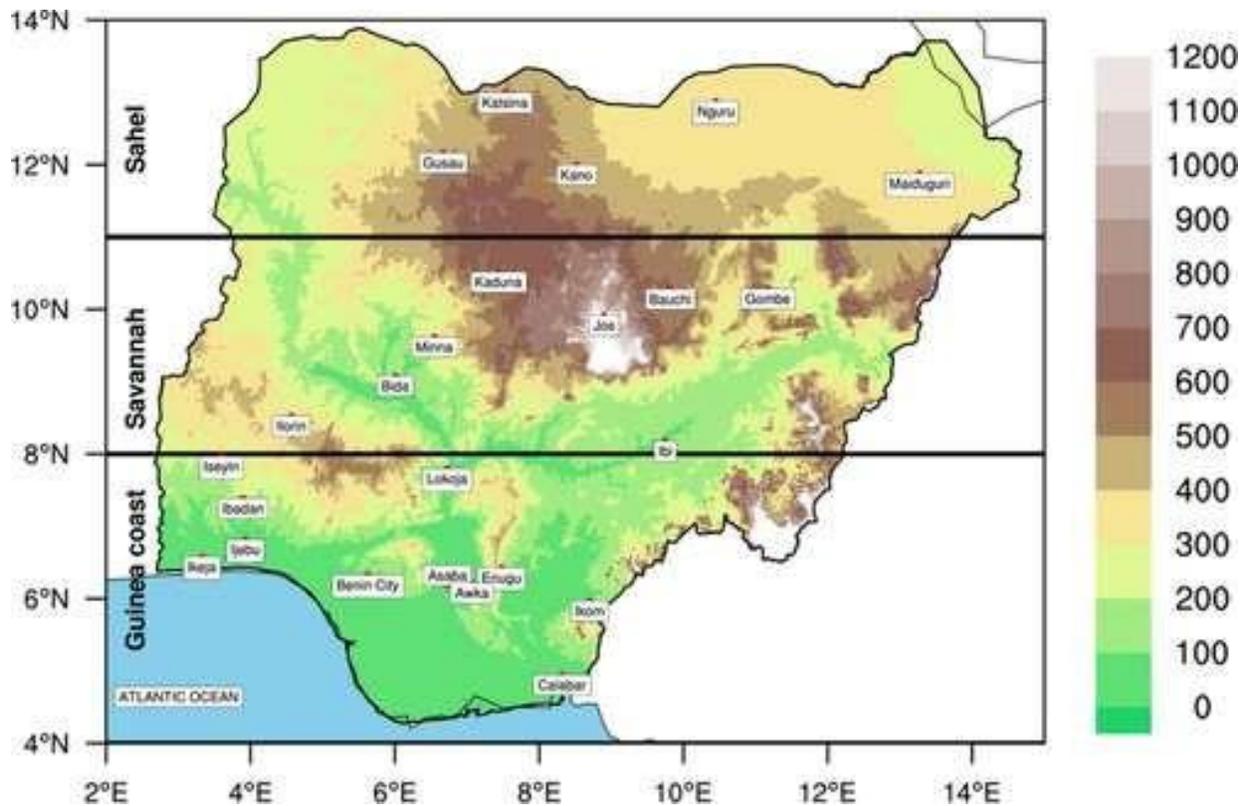


Figure 1: Three climatic zones in Nigeria
 Source Data: Royal Meteorological Institute

The three climatic zones are mainly influenced by the West African monsoon (Gbode et al., 2019). The monsoon provides the climatic precipitation for agricultural produce in the country and other sectors of the economy (Gbode et al., 2019). At a continental level, the UNICEF estimate, shows that majority of high risk countries are in Sub Saharan Africa (SSA).

However, ironically these high risk countries emit just approximately 9% of global CO₂. This therefore calls for increased attention by policy makers more especially in the continent against this global scourge, more especially given the exponential growth of the population in the continent. A cursory look at the Notre Dame Global Adaptation Initiative Country Index (ND-GAIN), shows that Nigeria is not spared of the implications of climate related risk factors. According to the Index, Nigeria is placed in the 53rd position in terms of vulnerability and the 6th in terms of least ready country. A position which is abysmally low when compared to other countries. However, the country comparatively outperformed some of her neighbouring states such as Cameroon (59th most vulnerable country and 16th least ready country), Benin (10th most vulnerable country and 59th least ready country), and, Niger (is the most vulnerable country and the 57th least ready country). The Figure below shows the country's performance in terms of ranking from 1995 to 2019.

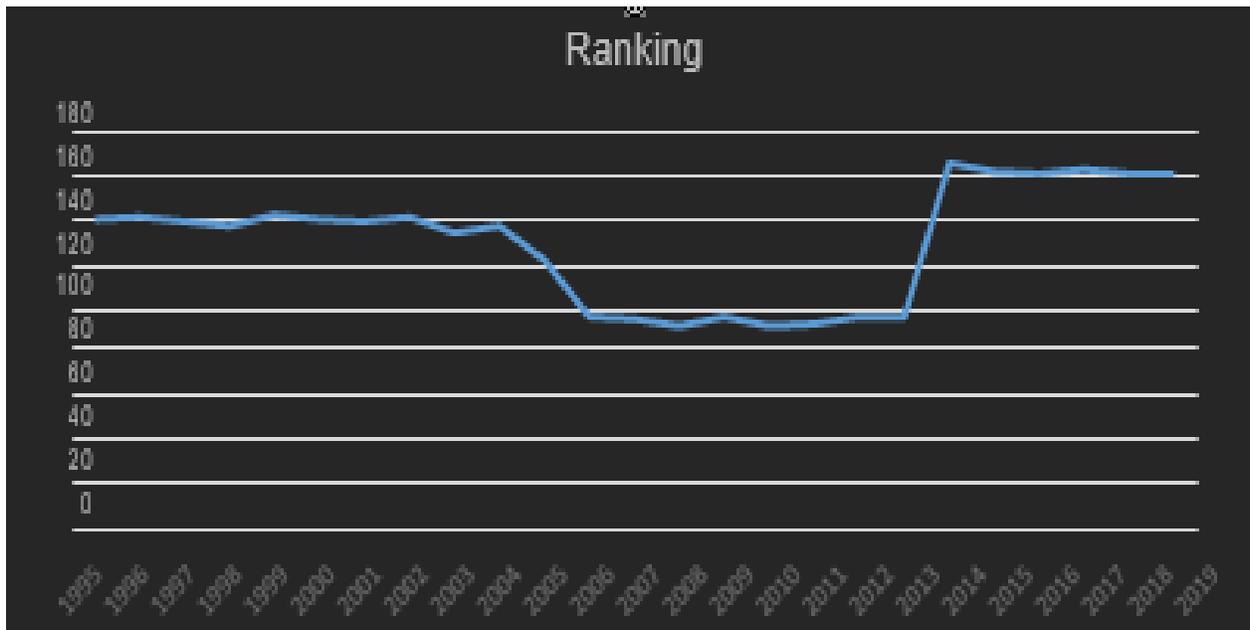


Figure 2: Nigeria ND-Gain Ranking from 1995-2019

Source Data: Notre Dame Global Adaptation Initiative (Graph plotted using Excel)

Studies have examined the effects of climate change on various soil functions and adaptations (Coyle et al., 2016; Ostle et al., 2009; Xiong et al., 2014). Ostle et al. (2009) for instance found that climate change related factors such as warming or drought decrease soil moisture and consequently reduce the carbon sequestration capacity in the UK. Agriculture has remained a crucial component of Nigeria's economy prior to the discovery of oil. It has remained a vital source for food production globally. More so, with the exponential growth of the country's population sustaining agricultural farm practices is crucial to feeding the nation. As at 2019 the country's population is estimated as at 195,874,740.

However, studies have shown that agricultural practices such as the cultivation of coffee, cotton, palm oil, soybean and wheat, may invariably lead to 'increase in soil erosion beyond the soil's ability to maintain itself'. To achieve coconut sufficiency in the Nigeria, it is therefore imperative to breed coconuts for tolerance/resistance in order to overcome the negative effects of biotic and climatic stress that hinder productivity (Suriya, 2016). This paper is an attempt at exploring implications of climate change on soil functions as a vital aspect of agriculture and the implications of this in achieving local coconut sufficiency from adopting sustainable farming and agricultural practices.

2.0 Literature Review

2.1 Conceptual Review

2.1.1 Soil Functions

Soil functions link the ‘physical, chemical, and biological’ processes in the soil system with purported outcomes and benefits to the society (Glæsner et al., 2014). The European Commission (2002) identifies seven major threats which cause soil degradation: soil erosion, decline in soil organic carbon, soil compaction, salinization, contamination, sealing and decline in soil biodiversity. Hamidov et al. (2018) opines two items listed above were not directly linked to agricultural soil management. Soil contamination and sealing were excluded as they are the direct result of industrial activities in the environment leading to pollution while the latter is the act of taking land out of production (European Commission, 2002). According to Hamidov et al. (2018) soil compaction has remained a global problem. It specifically affects root development and water retention capacity thus lowering crop yields (D’Or & Destain, 2016). The seven key functions of the soil are: food and biomass production; storing, filtering, transforming, and recycling water and nutrients; habitat and gene pool; SOC pool; providing raw materials; serving as physical and cultural environment for mankind; and storing the geological and archaeological heritage (European Commission, 2006).

Table 1: Soil functions and perceived link to with SGDs

Soil functions	Perceived link to SDG
Food and biomass production	Link to agriculture and biomass provision for food, fibre, energy: SDG 2
Storing, filtering, transforming, and recycling	Link to water quality, nutrients, flood control, microclimate, ecosystem resilience, detoxification: SDG 15
Habitat and gene pool	Link to biodiversity: SDG 15
Soil organic carbon pool	Link to climate change mitigation: SDG 13

Source Data: Montanarella and Alva (2015)

2.1.2 The Coconut Tree

The origin of coconut (*Cocos nucifera* L.) may be traced to Asia, however with no exact account found in the literature. The coconut is a monocotyledon plant which proliferates only via seeds. The coconut is a highly nutritional plant, and contains varied amounts of: Carbohydrates, Fat, Protein, Calcium, Phosphorus, Iron, Potassium, Vitamin A, C, B6, B12, Thiamine, Riboflavin, and Ash. The plant varieties range from the tall, dwarf and hybrids mainly found in Asia. The world’s major producers are Indonesia, Philippines, India, and Sri Lanka (Arunachalam, 2012). The caloric content of raw or cooked coconut is described and shown in the Figure below:

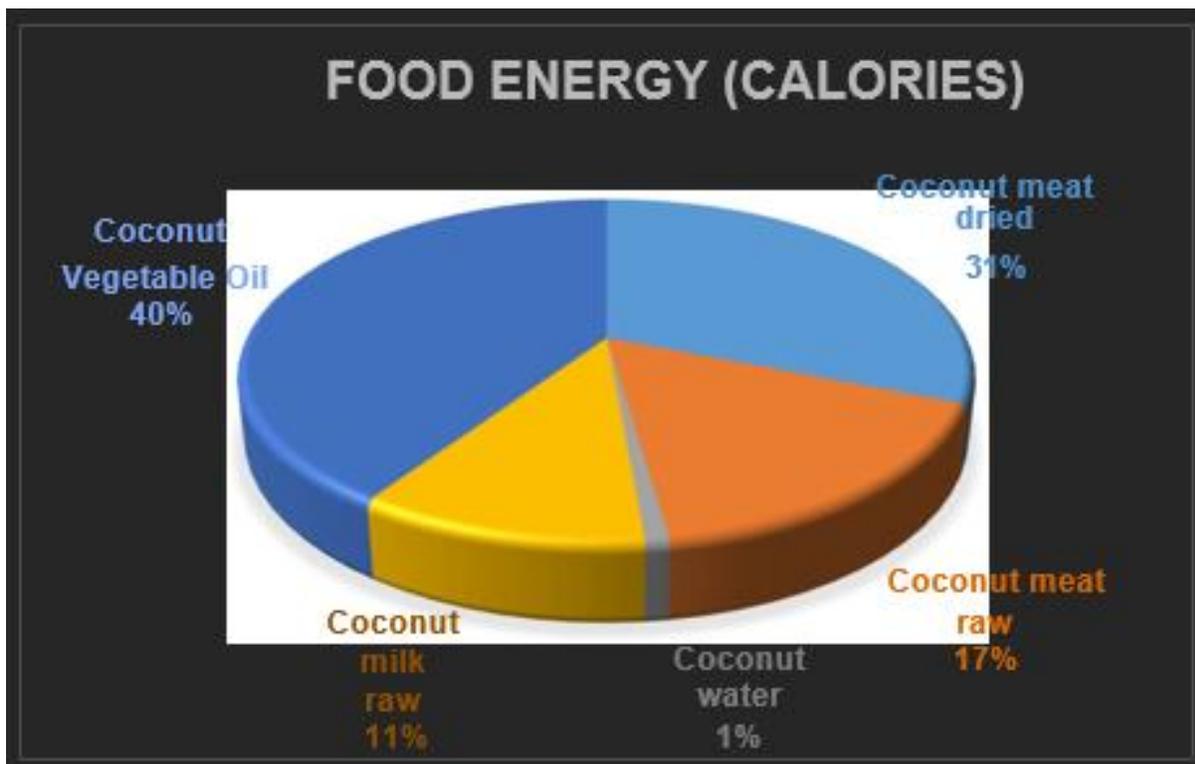


Figure 3: Nutritive value per 100g
Source: Infonet biovision (2021)

In addition, its other parts are also useful. These also include the hard shells which can be used for charcoal and when finely grated, can be used as fillers for objects made of plastic, such as buttons, containers and other objects. The fibres are also used in the upholstery industry, to make ropes, as mulching material or as a substitute for peat. The leaves and wood are used as building material and to make household objects (e.g. baskets, brooms) and tools. The Coconut tree is heavily water dependent, either from rainfall or ground water. However, it is resistant to water logging. The tree grows best at average temperatures of around 26-27degC. Therefore it grows at a length averaging between 750 m and 1300 m in favourable conditions. The growth is also stimulated by sufficient supply of chlorine in the soil and can withstand up to 1% salt in the soil (Infonet biovision, 2021).

2.1.3 Agricultural adaptation

Agricultural adaptation strategies, such as tillage and reconsolidation; plants and crop rotations; irrigation, manure and fertilization practices; and grazing management serve as major sources of temporal variability of soil properties and processes (Ascough et al., 2019). Studies have shown several benefits of agricultural adaptation strategies on improved crop production and sustainable environmental. Haddaway et al. (2015) in the U.K. found a positive mitigating effect of agricultural adaptation practices in mitigating climate change related risk factors. The use of such strategies can increase soil carbon sequestration process. And Westerberg (2011) argue that adaptation practices can optimise the phosphorus content with little environmental impact.

2.2 Strategies to mitigate impact of climate change

Authors have recommended that farmers implement varied forms adaptation for its related economic and climate related benefits. This is particularly useful in organic coconut cultivation which prevents monocropping (Infonet biovision, 2021).

‘Existing plantations can be improved by sowing at least 1 bottom crop of plants that offer ground coverage. Legumes can be planted here as green fertilisers. In multi-level agroforestry systems, cacao, bananas, pineapples and many other crops can be used. Spices such as ginger and turmeric also thrive under palms. If animals are kept, fodder crops should be integrated in a crop rotation system underneath the coconut palms’.

Benefits of adaptations includes such as market price changes, improved technology and knowledge (Reidsma et al., 2015). The options that may be implemented to mitigate the climate change-related risk includes introducing irrigation in areas prone to drought, crop rotation, increasing fertilization on farmland, altering tillage practices, and cultivation of melting permafrost soils (Mandryk et al., 2017; Schönhart et al., 2016; Ventrella et al., 2012). More so, sustainable farming and agricultural practices can reduce the negative impacts of agriculture on the soil, which may consequently prevent soil erosion and degradation or potential desertification.

According to Infonet biovision (2021), the precarious diseases which affect coconut with regards to disease and pests may be attributed to the following:

1. Cultivation in a monoculture, or with too few different varieties.
2. Too little distance between species that grow to the same height; failure to trim agroforestry systems.
3. Degenerated or poor soil, lacking organic material.
4. Unsuitable sites (water-logging, too dry, soil not deep enough for roots).organic farming systems.

The depth and temporal pattern of root growth varies with widely in different soil types (Ascough et al., 2019). The variation in pattern is such that occurs between and within species of a plant. The pattern of root growth is a function of the soil properties such as density, temperature, water retention capacity, salinity, and nutrient deficiencies, which change with depth in heterogeneous layered soils. Therefore alternating or use of varied roots would definitely depend on the soil structure and macroporosity.

The temporal pattern and depth of the root growth determines the distribution of water and nutrient uptake from the soil. This, in turn, influences water, chemical, and heat movement in the soil.

1. However, irrigation and the use of heavy machinery may increase the risk of soil compaction in the area. Thus, an appropriate use of agricultural machinery (e.g., low pressure and wide tires) is one effective measure against compaction (Prager et al., 2011).
2. Adaptation of crop varieties/hybrids and improved organic fertilizer use and management have been proposed to offset such climate change challenges when irrigation water is available (Dono et al., 2016), which may result in increased crop and biomass production due to the extended growing season, the CO₂ fertilization, and the effect of milder winters on irrigated autumn–spring hay crops.

3. Qiao et al. (2018) found evidence of spatial changes in the wheat-cultivated area primarily caused by nitrogen leaching from fertilization.

Studies have reported the decline in soil biodiversity as a key future threat (McBratney et al., 2014). As stated by Hamidov et al. (2018) the impact of biodiversity on soil fauna and microorganisms are relatively unexplored.

3.0 Survey

The researchers engaged in a field survey of local agricultural farmers in Anambra State. To ensure uniformity of responses, a structured questionnaires was administered. The distribution and retrieval of the questionnaires was conducted with the assistance of farmers' cooperative societies. This is particularly useful to reduce incidence of non-response bias. The graphs below summarise the responses to the questions asked.

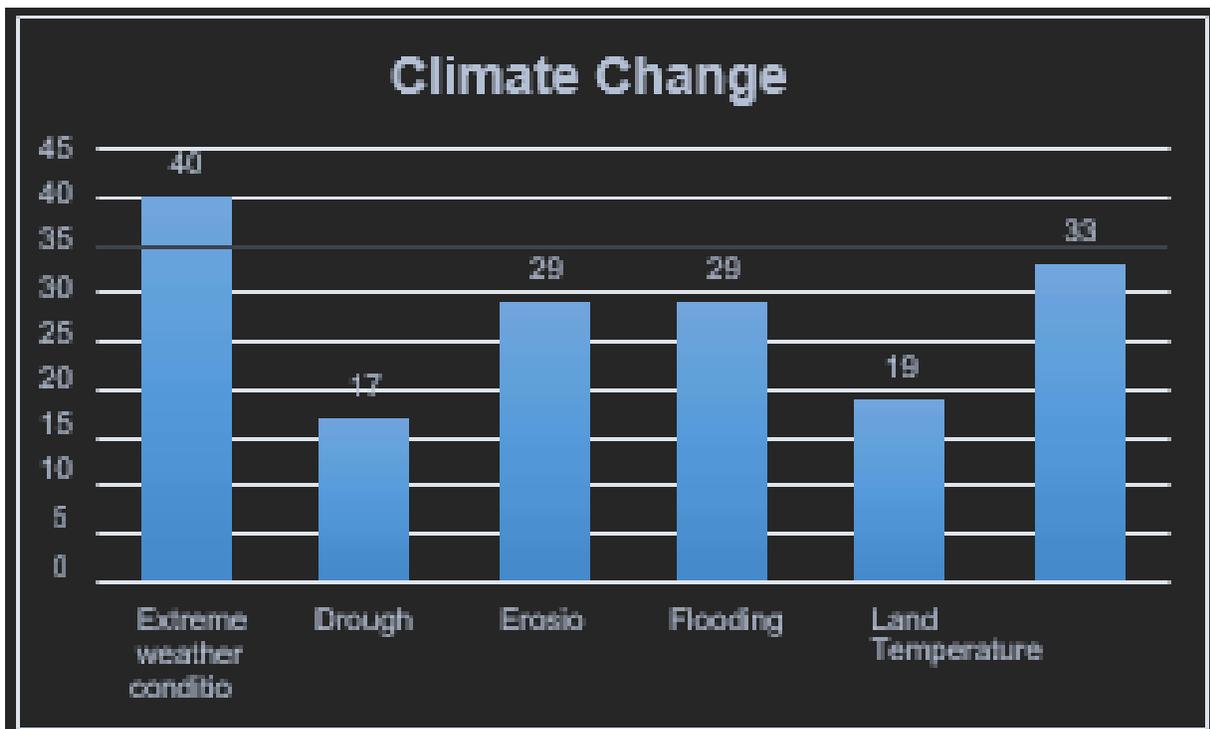


Figure 4: Climate change risk as perceived by local farmers

Source: Field Survey (2021)

The respondents were asked to indicate the extent of awareness of government intervention, the

researchers engaged in a field survey of local agricultural farmers in Anambra State. To ensure uniformity of responses, a structured questionnaires was administered. The distribution and retrieval of the questionnaires was conducted with the assistance of farmers' cooperative societies.

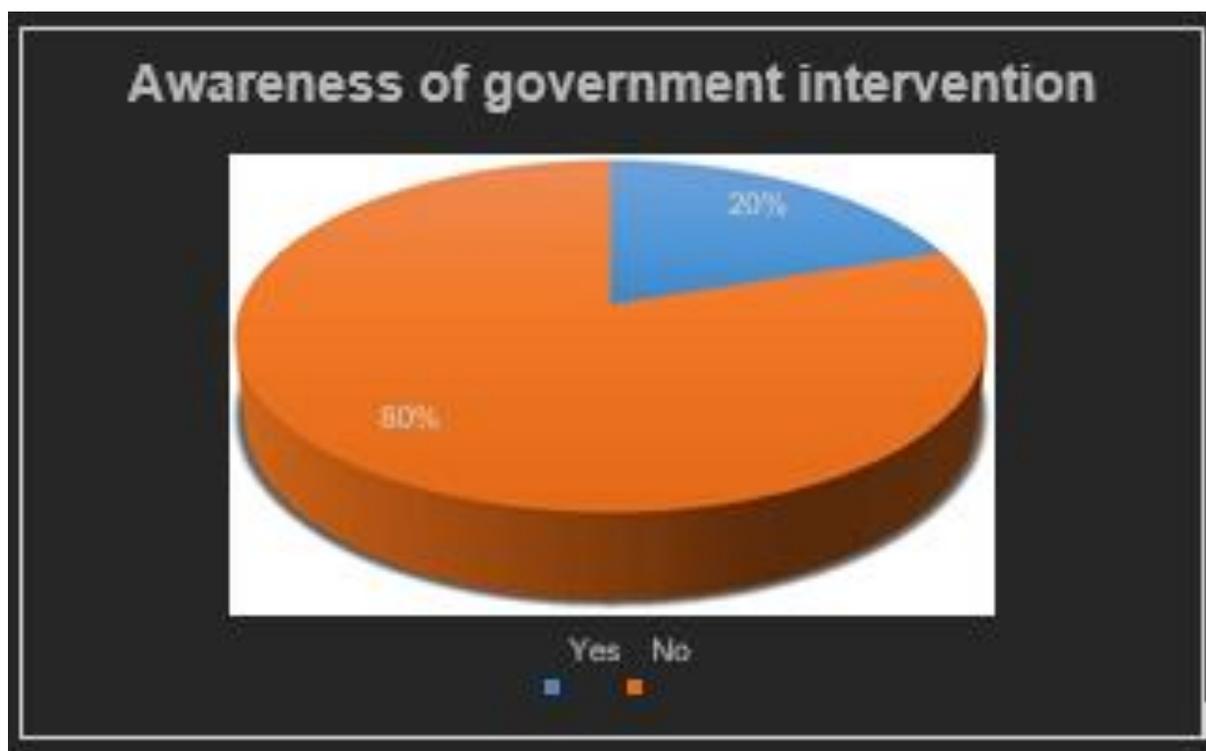


Figure 5: Awareness of government support towards climate change
Source: Field Survey (2021)

Table 2: Frequency distribution of questionnaire responses

S/No	Item	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	Introduction of new species and crop rotation	77	14	7	19	50
2	Altering the intensity of tillage practices	59	37	8	11	52
3	Implementing the use of irrigation and drainage systems	77	22	10	12	46
4	Organic manure and fertilizer optimization	102	3	12	14	36
5	Change of arable land to grassland	63	43	4	10	47

Source: Field Survey (2021)

The main inhibiting factors as identified by the respondents are shown in the Figure below. The respondents identified lack of access to finance as the main reason for non- implementation of modern farming techniques. This is correlated with absence of climate change initiatives, as most modern technologies are capital intensive requiring huge capital outlays. At the bottom is land unavailability, as most lands lie fallow in the rural communities with individuals lacking funds for cultivating such expanse land mass and therefore resorting to subsistence farming as a means of livelihood and not for large commercial endeavours.

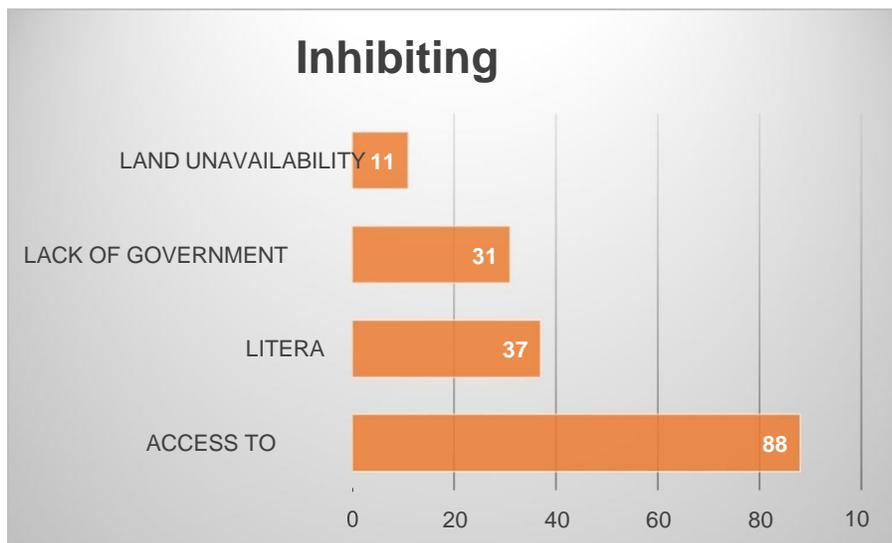


Figure 6: Inhibiting factors towards climate change adaptation
Source: Field Survey (2021)

4.0 Conclusion and Recommendations

The rate of climate change poses a significant threat to Sub-Saharan Africa. This threat if left unchecked may lead to lower crop yield and food scarcity in the region. In addition, the global volatility in oil prices from variable oil price movements and most economies adapting to renewable and sustainable energy options. May dampen the economic growth, while hindering the growth of future generations. Based on this, the study concludes that in this era there is a need to adapt and advance sustainable agricultural practices. These practices can promote food production in the country, both for local consumption and export. The country should strive to maintain a sustained diversification agenda by growing other non-oil sectors of which the agriculture is a key. However, sole focus should not be only increasing food production and soil systems; but rather, adopt a holistic approach geared towards the overall ecosystem (Hamidov et al., 2018). In addition, as suggested by Bonfante et al. (2017), the use of 'bioenergy crops' for their potential in reducing greenhouse emissions is highly recommended. These crops have also a potential to rejuvenate previously docile lands for re- cultivation. However, further research on usage and

particular combinations for such intercropping should be embarked upon to avoid perennial losses. This therefore calls for renewed government intervention in agricultural research funding in order to meet up with countries in Asia, Europe, etc. that have implemented the use of artificial intelligence (AI) in agricultural practices.

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Appendix

University of Notre Dame Global Adaptation Initiative Country Index (1995-2019)

Year	Ranking
1995	141
1996	142
1997	140
1998	138
1999	143
2000	141
2001	140
2002	142
2003	135
2004	138
2005	123
2006	98
2007	97
2008	94
2009	98
2010	94
2011	95
2012	98
2013	98
2014	166
2015	162
2016	161
2017	163
2018	161
2019	161

DETERMINANTS OF FINANCIAL LEVERAGE OF SELECTED PUBLIC COMPANIES IN NIGERIA

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ABSTRACT

The study examines the determinants of financial leverage selected public companies in Nigeria for the period of six years from 2015-2020 both years inclusive. The study considered financial leverage determinants such as firm's tangibility, size, growth, profitability and age on the sample firms. Secondary data from the annual reports of the sample firm have been analysed using multiple regression. The result reveals that size and profitability are negatively related to leverage while age, growth and assets tangibility are positively related to leverage which implies they are strong determinants of leverage in the Nigerian public companies. Therefore, it is recommended among others that in carrying out financial leverage decision, the financial managers of public companies in Nigeria should deploy and properly measure size, age, growth, profitability and assets tangibility of their companies in order to have an optimum financing decision that minimize servicing cost.

Keyword: *Financial Leverage, Public Companies, Firm Profitability, Firm Growth, firm's tangibility, firm's age and Firm Size.*

INTRODUCTION

Financial leverage is an important thing in the firm's financial dealings and it looks about debt equity and other financial securities. It gives many funds to firms and has positively related with in the business sector in Nigeria. Aloa and Sanyaolu (2020), opined that financial leverage can be derived out of earnings before interest and also considered the difference of earning per share as the same. Financial leverage refers to Company use debt and equity as fixed income securities. Most of the firms used financial leverage as main element of the capital structure which to optimum wealth of shareholders'. But, there may be increased bankruptcy of the firms if they not concern about leverage in fairly. However financial leverage operates as a control for management in the firms and sometimes avoids financial risk also it used to achieve profits for firm and shareholders

(Hashini and Madumali 2018). As well as, financial leverage has been used as a technique to help of borrowed money to purchase assets.

Financial leverage has positively influence on firm performance because it can be treated as a mechanism for management financial discipline. This is not always applied to the firms with two components of debt. Firms with high level of indebtedness may result to significant financial challenges and that influence their performance negatively. The relevance of leverage can be found in its presence in the capital structure of the firm; it is necessary for the firm to take decision of leverage position in the capital structure (Hashini & Madumali 2018). According to Meyers and Majluf (1984), leverage defines capital structure of the firms. It is one of the most challenging decisions for the management of the organization to choose the mixture of debt and equity. Financial leverage save cost and reduces the risk of the owners. However, it becomes costly when firms are unable to use it efficiently. Firms have to pay financial charges on the leverage. If firms fail to apply leverage effectively, they have to suffer from cost of interest expenses on the amount of leverage which is to be repaid. Profitable firms prefer to use leverage because it reduces the risk of owner and more cost saving for the shareholders of such firms.

However, how the leverage of a firm is determined in a world in which cash flows are uncertain and in which capital can be obtained by many different media ranging from pure debt instruments to pure equity instruments is an unsettled issue, Rahul (2005). Financial leverage is cost saving and it also reduces the risk of the owners but it becomes costly when organizations are unable to use it efficiently. Companies have to pay financial charges on the leverage. If companies fail to use leverage effectively, they have to suffer from many problems because the amount of leverage is to be repaid with interest expense. Profitable companies prefer to use leverage because it reduces the risk of owner and more cost saving for the shareholders of the organization. Financial leverage

affects firm performance in aspect of profitability which has direct impact on the management performance, capital structure, stock price, wealth of shareholders and all the stakeholders (Hashini & Madumali 2018). The most dangerous effect of using financial leverage is that it multiplies the losses. If time is sufficiently hard, a company that has borrowed heavily may not be able to repay its debt. The company then becomes bankrupt and shareholders lose their entire investment, because debt position affects returns to shareholders in good times and adversely affects them in bad times. In early days, the existence of financial leverage in the capital structure of a firm was considered a great weakness. The firm's leverage decision centres on the allocation between debt and equity in financing the company. However, how the leverage of a firm is determined in a world in which capital can be obtained by different media ranging from pure debt instrument to pure equity instrument and in which cash flow are uncertain in an unsettled issue (Ibrahim & Lau 2019). Previous studies such as Feras (2020), Firmike and Luh (2020), Ibrahim and Lau (2019), Hashini and Madumali (2018) have identified the determinants of leverage to include firm's growth, size, tangibility of assets, age and profitability. Still there are different positions on which are the factors that determines the leverage decisions of public companies in Nigeria. Also most of the studies done to determine the factors influencing leverage decisions were carried out in environment outside Nigeria and only in a single sector. Most of the studies done in Nigeria did not combine all variables used in this study which are firm size, age, growth, profitability and assets tangibility. This study seeks to improve on the previous studies by making use of combine variables and extending the time frame to 2020 while using public companies in Nigeria against a single sector as been used in the previous studies. The main objective of this study is to examine the determinants of financial leverage of selected public companies in Nigeria. The specific objectives are as follows;

1. To examine the relationship between firm's growth and financial leverage of selected public companies in Nigeria.
2. To examine the relationship between firm size and financial leverage of selected public companies in Nigeria.
3. To assess the relationship between tangible assets and financial leverage of selected public companies in Nigeria.
4. To assess the relationship between firm age and financial leverage of selected public companies in Nigeria.
5. To examine the relationship between profitability and financial leverage of selected public companies in Nigeria.

LITERATURE REVIEW

According to Maryam and Barjoyaibin (2012), leverage is the portion of the fixed costs which represents a risk to the firm. Operating leverage, a measure of operating risk, refers to the fixed operating costs found in the firm's income statement, whereas financial leverage is a measure of financial risk, refers to financing a portion of the firm's assets, bearing fixed financing charges in hopes of increasing the return to the common stockholders. The higher the financial leverage, the higher the financial risk, and the higher the cost of capital Shim and Siegel (1998). The firms Leverage ratio show how heavily the firm is in debt. When a firm borrows money, it promises to make a series of interest payments and then to repay the amount that it has borrowed. If profits rise, the debt holders continue to receive a fixed interest payment, so that all the gains go to the shareholders. Of course, the reverse happens if profits fall. In this case shareholders bear all the pain. If times are sufficiently hard, a firm that has borrowed heavily may not be able to pay its

debts. The firm is then bankrupt and shareholders lose their entire investment. Because debt increases return to shareholders in good times and reduces them in bad times, it is said to create financial leverage.

In general, the more debt a firm uses in relation to its total assets, the greater its financial leverage. Financial leverage is the magnification of risk and return introduced through the use of fixed-cost financing, such as debt and preferred stock. The more fixed-cost debt a firm uses, the greater was its expected risk and return Gitman (1991). Ogawa (2003) argues that corporate debt can affect investment by creating debt overhang. Debt overhang is defined as deterrence of new investment due to the presence of debt outstanding. It occurs when the face value of debt outstanding is greater than its market value. Due to the significant importance of the financial distress, understanding its determinants has had wide examination in the financial economics literature. Through the course of the investigation, the literature shows recognition that a firm's leverage is a main factor that negatively impacts the level of financial distress Opler and Titman (1994); Andrade and Kaplan (1998).

Determinants of Financial Leverage

Ibrahim and Lau (2019) posit that theoretical constructs of any empirical research are proxied indirectly through the use of firm level research. Ibrahim and Lau (2019) identified the determinants of leverage to include profitability, growth, asset tangibility, firm size, and firm age.

Firm Profitability and Leverage

Firm financial performance has been identified as a potential determinant of capital structure. According to the trade-off theory, profitable firms will incur more debt since they are likely to have a high tax burden and a low risk of bankruptcy (Odit & Gobardhum 2011). However, Myers and Majluf (1984) argue that successful companies do not need to place much dependence on

external funding since they rely on internal reserve. Hence, there is a negative relationship between debt and profitability Kuben (2008).

According to Odit and Gobardhum (2011) profitability is normally assumed to have a positive link with debt. This has been clarified by the pecking order theory, whereby firms prefer internal sources of finance to external sources. Profitable firms, having access to retained profits, may rely on it at opposed to outside sources as debt (Aloa & Sanyaolu 2020). Give the pecking order hypothesis firms tend to use internally generated fund first and then resort to external financing. This implies that profitable firms will have less amount of leverage (Akinlo & Asaolu 2012). We expect a negative relationship between profitability and leverage. There are no consistent theoretical predictions on the effects of profitability on leverage from point of view of the trade-off theory more profitable companies should have higher leverage because they have more income to shield from tax (Raheel & Shah 2015).

HO₁: Profitability has no positive relationship with financial leverage of selected public companies in Nigeria.

Firm Growth and Leverage

The relationship between growth and capital structure can be explained using pecking order theory. Growing firms place a higher demand on internal reserves and firm with high growth will have relatively high debt ratios (Marina & Ng Huey 2012). However, Myers and Rajan (1998) argues that the value of debts is inversely proportionate to the ratio of the value of growth over the maximized market value of the firm. Empirically, there is much controversy about the relationship between growth rate and level of leverage. According to the pecking order theory hypothesis, a firm will first use internally generated funds which may not be sufficient for a growing firm. And

next options for the growing firms is to use debt financing which implies that a growing firm will have a high leverage (Shehu 2011).

HO₂: Firm's growth has no positive relationship with financial leverage of selected public companies in Nigeria.

Firm Size and Leverage

Kuben (2008), assert that larger firms are more diversified and are therefore less susceptible to bankruptcy than smaller firms. Rajan and Zingales (1995) also hold that there is a positive relationship between firm size and leverage. Odit and Gobardhum (2011) considered firm size and an important determinant of a firm's financial leverage. Large firms tend to be more diversified and this has lower variance of earnings, which enable them to stand high leverage ratios. Hashini and Madumali (2018) they claim those smaller firms are more likely to depend on equity while larger firms are most preferably use debt. Shehu (2011) view firm size and leverage as a relationship of size to leverage of a firm, firm do not consider the bankruptcy cost as variable in deciding the level of leverage as these cost are fixed by constitution and constitute a smaller proportion of the total firm's value.

HO₃: Firm size has no positive relationship with financial leverage of selected public companies in Nigeria.

Tangibility of Assets and Leverage

Tangibility of assets is an essential determinant of firm's financial leverage. The extent to which a firm's asset are tangible should result in a firm having a greater liquidation value previous studies have review that leverage is positively associated with a firm's asset Kuben (2008). According to Shehu (2011), firm with large amount of fixed asset can borrow at relatively lower rate of interest

by providing the security of these assets to creditor. Empirical evidence reveal mix conclusion on the effect of tangibility on financial leverage across various studies.

HO4: Tangibility of assets has no positive relationship with financial leverage of selected public companies in Nigeria.

Firm Age and Leverage

Age of a firm is a means of measure of goodwill in financial leverage model. As a going concern firm, it increases its capacity to take on more debt, hence age is positively related to debt. Before a bank grants a loan to firm they evaluate their credit worthiness of the business, Shehu (2011). According to Odit and Gobardhum (2011) age of the firm is normally viewed as a standard measure of reputation in capital structure models. Over time, from the life cycle perspective, the firm establishes itself as continuing business and thus increasing its capacity to take more debt.

HO5: Firm age has no positive relationship with financial leverage of selected public companies in Nigeria.

Theoretical Framework

Most researchers on capital structure take as their point of departure the seminal work of Modigliani and Miller (1958), which derived the leverage irrelevance theorem concluding that capital structure does not impact firm value in a deal environment. The assumption of an ideal financial environment excludes the impact of tax, inflation and transaction costs. This theory knows as MMI, receiving citizen from fear who question the validity of their theory given the fact that the no firm actually operate in an environment without the impact of tax, inflation and transaction costs. This prompted Modigliani and Miller (1968) to issue a correction which referred to as MMII. They still argue that a change in the debt (equity ratio does not impact on firm value, however when taxes and other transaction cost are considered two factors needs to be

acknowledge, firms, a firm's weighted average cost of capital (WACC) firms cost of equity increases as it increases its debt since shareholders bear higher business risk due to the increase possibility of bankruptcy. The theories that guide this study are discussed as to include pecking order theory, trade-off theory, agency cost theory

Pecking Order Theory

The pecking order theory was propounded by Myers and Majluf (1984). They suggested that firm treated as great importance of retaining earnings than the issuance of new stock because their quarrel rely on internal equity obtained and are affordable as estimated to external equity. Firm has to raise their equity costs which carry to cost of flotation in terms of new issues shares. According to Rahul (2005), pecking order framework lays out the linkage between firm's capital structure, dividend and investment policies. The model suggests that firms prefer to use internal equity to pay dividend and finance new investment. It ranks internal equity at the top of the pecking order, followed by debt and then hybrids of debt-equity with external finance at the bottom of the pecking order. In summary, the pecking order theory states that business adhere to a hierarchy of financing sources and prefer internal financing when available, and if external financing is required debt is preferred over equity.

Trade-off Theory

The trade-off theory was propounded by Fischer, Heinkel and Zachner (1989). According to them Payment of interest on debt is a mandatory charge on the business of the firm, which is allowed as expenses for tax purpose. As a result, the presence of bankruptcy cost and favourable tax treatment of interest payment led to the development of static trade off theory. The proponents of trade off model argues that firms balance debt and equity position by making trade-off between the value

of tax shields on interest and the cost of bankruptcy or financial distress. In other words, keeping other things constant, higher the cost of bankruptcy, lower the debt and vice versa Rabul (2005). According to Kuben (2008) postulates that debt offers firms a tax shield and firms therefore pursue higher levels of debt in order to gain the maximum tax benefit and ultimately enhance profitability. However, high levels of debt increase the possibility of bankruptcy. The advantages of this approach include the possibility of deducting interest payment from company tax (Modigliani and Miller (1963).

Agency Cost Theory

The agency theory was propounded by Jensen and Mecking (1976). According to them capital structure is influenced by firm management, which has a long term impact on the firm's capital structure. However, management might be tempted to pursue personal incentives instead of maximizing shareholder value (Chandrasekharan 2012). Jensen and Mecking (1976) identified two types of conflicts, those between shareholders and managers and those between debt holders and equity holders. They postulate that conflicts between shareholders and managers occur since manager holds more than one hundred percent of the residual claim Kuben (2008). According to Maryam and Bariyoaihu (2012), the theory implies that an optimal level of capital structure can be defined by minimizing the costs arising from the conflict between shareholders and managers interests.

Review of Empirical Studies

Yahaya and Tijjani (2021) examine how Firm size and age influence firm-level leverage on the oil and gas industries in Nigeria. The study used non-experimental research and correlational design. Data were extracted from annuals and accounts of 8 firms over a period of 13 years (2007-2019) and subjected to descriptive statistics (number of observations, mean, standard deviations, mean,

minimum and maximum means) and inferential statistics (multiple regression analysis). The results show that firm size has a negative and significant impact on firm-level financial leverage. Firm age has a positive and significant effect on firm-level leverage. The study recommended that for highly leveraged firms, they should take advantage of their experience and reduce leverage while reducing their investments in total assets.

Feras (2020) examines the determinants of financial Leverage on Productivity and performance of a firm. The study used Jordan listed companies. A total of 40 listed companies were used to obtain the data, and 200 observations were recorded, the data for the period of 2011 to 2015 were obtained for this study. The technique of panel data analysis was used with fixed effects, and random effects equations, Kao integration test and Hausman test were also applied. The study showed that the impact of growth, tangibility, financial leverage and combined leverage is significant on return on assets of a firm. In contrast, the impact of liquidity and operating leverage was insignificant. While in the case of productivity, it was seen that the impact of growth, liquidity, tangibility, operating Leverage, Financial Leverage and combined leverage is significant on the productivity of a firm. This research has its limitations when it comes to the size of sample and data collection and when it comes to the time constraints which limited the diversity of data as well. Also the research was not carried in Nigeria.

Firmike and Luh (2020) examine the effect of firm size, profitability, and leverage on firm value. The population of the research was companies in the consumer goods sector registered at Indonesia Stock Exchange in 2017-2019, and the sample size was 33 companies using saturated sampling technique. Multiple regression analysis was used to analysis the data. The results showed that firm size, profitability, and leverage has a positive and significant effect in firm value in companies in

the consumer goods sector listed on the Indonesia Stock Exchange (IDX) 2017- 2019. This study was done outside Nigeria which business environmental factors differ.

Edere and Ujuju (2020) examine the effect of financial leverage on value of firms in Nigeria in order to determine whether debt as a component of capital structure has positive or negative impact on value of firms in Nigeria. The Pearson correlation coefficient and Ordinary Least Squares (OLS) regression analysis were used to test the hypotheses. Secondary sources of information were applied in carrying out the analysis. The results of the study showed that long term debt has a significant positive effect on the value of our sampled companies' performance. Medium term debt and short term debts have significant positive influence on our sampled quoted companies' value and were statistically significant. The study recommended that firms should go ahead and finance their operations with long term debt, medium term debts and short term debts when the need arises in order to ensure that value is enhanced. This study was carried out in Nigerian firms however, the study examine financial leverage variables as they affect firms values against determining factors such as profitability, firm size, age, assets tangibility and growth.

Aloa and Sanyaolu (2020) examine the effect of leverage on the profitability of Nigerian manufacturing firms based on the data of seventeen (17) Nigerian consumer goods firms listed on the Nigerian Stock Exchange for the period of 2012 to 2017. The study adopted the dynamic panel model. The finding of the study revealed that leverage has a significant positive effect on profitability. The study recommended that companies in the Nigerian consumer goods industry should take advantage of debts' tax shield from the interest in their financial structure in order to improve their profitability level

Ibrahim and Lau (2019) the determinants of financial leverage of the surviving public listed companies in Malaysia. A total of 151 surviving publicly listed companies in the Bursa Malaysia

were selected from 2000 to 2015. A filtering approach was adopted on the total of 474 companies. The descriptive statistics result was applied and panel data analysis through the use of fixed effect model. This study used four determinants as independent variables, namely asset tangibility, growth opportunities, profitability and liquidity with firm size as a control variable. The financial leverage is measured by the short term debt ratio, long term debt ratio and debt ratio acting as the dependent variables. The findings reveal that asset tangibility and growth opportunities are both significant positively related to long term debt and debt ratio, showing that firms prefer to use long term debt to finance their fixed assets and growth, support the trade-off theory. Profitability and liquidity are found to be significant negatively related to short term debt ratio and debt ratio, consistent with the pecking order theory, implying that more profitable and liquid surviving companies tend to use internal sources (retained earnings) as priority in making their financial leverage decisions by utilizing these funds to finance business activities and expecting to have lower leverage. This study recommends the use of internal sources as priority for financial leverage decisions as compared to external sources for surviving and performance sustainability

Hashini and Madumali (2018) examine the effect of firm size on financial leverage. The study total assets and Sales Volume used to measure size of the firm while total debt ratio used to measure financial leverage. The regression analysis and descriptive statistic model were used for data analysis. The study used appropriated 10 listed manufacturing companies at Colombo Stock Exchange of Sri Lanka as sample over the period of 2012 to 2016. Secondary data from annual reports were extracted for data analysis. The study found that Sales Volume is a positively correlate and significantly affect Debt ratio in evaluating listed manufacturing companies at CSE in Sri Lanka. In addition to their attained that Total Assets has negatively relation with Debt ratio but it is insignificant level. This study examined only one variable which is firm size as it relates to

financial leverage, this is not enough to fully understand factors influencing leverage decision. It also deals with only manufacturing companies and outside Nigeria which results may not apply in other sectors and Nigeria based on differential in environmental factors.

METHODOLOGY.

This study used quantitative research design, where quantitative data were derived from annual reports of the selected public companies listed on the Nigerian Stock Exchange from 2015-2020. (Presently known as Nigerian Exchange Group PLC- NGX-Group PLC) The study adopted secondary data which were obtained through published annual reports on the Nigerian Stock Exchange official website (presently known as Nigerian Exchange Group PLC- NGX-Group PLC). The hypotheses were tested based on the information obtained from the historical data documented in the annual reports and accounts of the listed firms. This is because the phenomenon observed in the study has already taken place. The population of the study is made up of 177 public companies on the Nigerian Stock Exchange as at 31st December, 2020 (presently known as Nigerian Exchange Group PLC- NGX-Group PLC). The convenience sampling technique was used selecting 40 public companies in Nigeria as at 31st December 2020, for the period of 6(six) year's annual financial report from 2015- 2020.

Model Specification

$LE_{vit} = F(TANG_{it}, SIZE_{it}, GROWTH_{it}, PROF_{it}, AGE_{it}, E_{it})$

$LE_{vit} = \alpha_0 + B_1TANG_{it} + B_2SIZE_{it} + B_3GROWTH_{it} + B_4PROF_{it} + B_5AGE_{it} + E_{it}$

Where

α_0 = Constant or intercept

B_{1-5} = Coefficients of explanatory variables

E_{it} = Error term representing other explanatory variables that were not captured.

LEV_{it} (leverage ratio) = represents leverage (measure as book value of long term debt divided by capital employed) i.e long term debts plus shareholders' funds.

The dependent variable is leverage while the independent variable is profitability, assets tangibility, growth, age and size. Chandrasekharan (2012) explain the measurement of financial leverage determinants as follows;

$$\text{LEVit} = \frac{\text{Book value of long term debt}}{\text{Capital employed}}$$

$$\text{TANG} = \frac{\text{Fixed Asset}}{\text{Total Asset}}$$

$$\text{SIZE} = \text{Size of the firms (measured as log of turnover)}$$

$$\text{GROWTH} = \frac{\Delta \text{Total Asset}}{\text{Total Asset}}$$

$$\text{PROF} = \frac{\text{PAT}}{\text{Capital Employed}}$$

$$\text{AGE} = \text{Number of years in which the firm was incorporated measured as the natural logarithm of number of the year of incorporation (no of year of incorporation)}$$

The statistical method of descriptive statistics, correlation and regression analyses was used to analyse the data. Descriptive statistics are used to describe the initial characteristic of the data set and provide background information on the data used in the study, correlation on the other hand involves the investigation of relationship that exist between the dependent variable and the independent variables. Multiple regression analyses determine the specific function relating the dependent variable to the independent variables.

RESULTS AND DISCUSSIONS

Descriptive Statistics

The descriptive statistics of the variables used in the analysis are presented in table 1. Leverage constitutes the main variable of interest as it is the dependent variable. From the table1. Leverage has a mean value of 3.610798 and a median of 0.08834. The maximum value is 439.0054, while the minimum value is -0.20818. Leverage was positively skewed with a value of 10.76468 and a Jacque-Bera value of 121460.2. This suggests a high degree of variability of the data between time

series. Firm age had the highest mean with a value of 45.475 and also a median of 47. All other variables were positively skewed with profitability having the highest skewness of 10.92065.

Table 1: **Descriptive Statistics: Determinants of Financial Leverage Conduct**

	LEV	TANG	SIZE	GROWTH	PROF	AGE
Mean	3.610798	8.1889972	6.725244	0.294988	0.183709	45.475
Median	0.08834	0.418874	6.635903	0.119256	0.100529	47
Maximum	439.0054	846.9657	9.117901	12.72064	34.79403	79
Minimum	-0.20818	0.005959	4.00791	-1	-11.675	25
Std. Dev.	35.9151	77.66786	0.876485	1.38628	2.635892	11.52447
Skewness	10.76468	9.97558	-0.026931	7.197386	10.92065	0.515032
Kurtosis	121.7927	101.388	4.074503	58.32372	189519.5	8.897406
Jarque-Bera	121460.2	83904.75	9.645483	27232.7	189519.5	8.897406
Probability	0	0	0.008045	0	0	0.011694
Sum	722.1596	1637.794	1345.049	58.99763	36.74183	9095
Sum Sq. Dev.	256689	1200427	152.877	382.4329	1382.637	26429.87
Observation	200	200	200	200	200	200

Source: Author (2021)

Empirical Relationship between the Determinants of Financial Leverage

In an attempt to explore the relationship among variables used in this study, correlation analysis was carried out. Table 2 shows the relationship among variables. The table shows that the coefficient of correlation of a variable with respect to itself is 1.000. The analysis showed that only tangibility had a positive relationship with leverage. Firm size, firm growth, profitability and firm age displayed a negative relationship with leverage in terms of coefficient; the highest coefficient was noticed between leverage and firm tangibility.

Table 2: Correlation: Determinants of Financial Leverage of Selected Consumers

Covariance Analysis: Ordinary						
Date: 09/02/21 Time: 19:00						
Sample: 0.08834 1200						
Included observation: 200						
Correlation	LEV	TANG	SIZE	GROWTH	PROF	AGE
Probability	1					
LEV	1					
TANG	0.986674	1				
	0	---				
SIZE	-0.16157	-0.16476	1			
	0.0223	0.0197	---			
GROWTH	-0.05607	-0.06318	0.051182	1		
	0.4303	0.3741	0.4717	---		
PROF	-0.03891	-0.03716	0.045609	0.028453	1	
	0.5843	0.6014	0.5213	0.6892	----	
AGE	-0.14255	-0.244723	0.008926	-0.0361		
	0.044	0.0371	0.005	0.9002	0.6119	

Source: Author (2021)

Regression Analysis

The results of the initial and final output are presented in table 3 and 4. From the initial output, it can be seen that firm tangibility and firm size had a positive relationship with leverage. Also firm growth and firm age exhibited a positive relationship with leverage. While a negative relationship was found to exist between leverage and profitability. The R-square value is 0.97 is very high and indicates that 97 percent of the systematic variations in the dependent variable has been explained by the model. This indicates that the estimated model has a good predictive power. The Durbin-Watson value of 2.97 is also high.

Table 3

Variables	Coefficient	T-ratio	Prob
C	-1.17297	-0.27598	0.7829
TANG	0.456779	81.70401	0
SIZE	0.074733	0.147977	0.8825
GROWTH	0.162734	0.536534	0.5922
PROF	-0.03188	-0.200053	0.8416
AGE	0.010962	0.286384	0.7749
R ² = 0.973582		DW = 2.978298	

Source: Author (2021)

The final output is presented in table 4. A first order autoregressive technique was introduced to correct for autocorrelation in the first output. From the final output, tangibility, firm growth and firm age showed a positive relationship with leverage while firm size and profitability showed a negative relationship with leverage. This means that tangibility, firm growth and firm age are important determinants of leverage. The R-square value has increase in value to 0.98 meaning 98 percent of the systematic variations in leverage has been explained by the dependent variable. This shows that the model has good predictive power. The Durbin-Watson value is 2.33. This means the result can be relied upon for policy direction.

Table 4

Variables	Coefficient	T-Ratio	Prob
C	0.307899	0.114913	0.9086
TANG	0.452396	111.6592	0
SIZE	-0.10397	-0.322845	0.7472
GROWTH	0.089297	0.360449	0.7189
PROF	-0.01195	-0.097242	0.9226
AGE	0.01195	0.25254	0.8009
R ² = 0.98		DW = -2.3	

Source: Author (2021)

Discussion of Results

From the result of the analysis, a negative relationship was observed between leverage and firm size. We therefore accept the null hypothesis and reject the alternative hypothesis. This result is

contrary to the findings of Feras (2020), Firmike and Luh (2020), Alao and Sanyaolu (2020) and Hashini and Madumali (2018) who found a positive relationship between firm size and leverage. While the result is consistent with the findings of Yahaya and Tijjani (2021) who found a negative relationship between firm size and leverage. Also, the result of the analysis showed that profitability had a negative relationship with leverage which we therefore accept the null hypothesis and reject the alternative hypothesis. This result is in agreement with the findings of Ibrahim and Lau (2019) who reveals that profitability has significantly negative relationship with leverage. While the result is inconsistent with the findings of Firmike and Luh (2020), Aloa and Sanyaolu (2020) who found positive relationship between profitability and leverage.

There is a positive relationship between leverage and assets tangibility from the result of the analysis. We therefore reject null hypothesis and accept the alternative hypothesis. This result is consistent with the findings of Ibrahim and Lau (2019) who found a positive relationship between assets tangibility and leverage. This was supported by the findings of Feras (2020) who also found a positive relationship between assets tangibility and leverage. Furthermore, the result of the analysis showed that leverage had a positive relationship with growth. We therefore reject the null hypothesis and accept the alternative hypothesis. This result is consistent with the findings of Ibrahim and Lau (2019) who found a positive relationship between growth and leverage. This was supported by the findings of Feras (2020) who also found a positive relationship between assets tangibility and leverage.

The result of the study showed a positive relationship between firm age and leverage. We therefore reject the null hypothesis while accepting the alternate hypothesis. The result is consistent with the result of Yahaya and Tijjani (2021) who found a positive relationship between firm age and leverage.

CONCLUSION

This study was carried out to examine determinants of financial leverage of selected public companies in Nigeria. The result of the empirical analysis showed that: Firm tangibility had a positive relationship with leverage ratio, Firm growth had a positive relationship with leverage ratio, Firm age had a positive relationship with leverage ratio, Firm size had a negative relationship with leverage ratio and Firm profitability had a negative relationship with leverage ratio. This study examined determinants of financial leverage of selected public companies. Financial leverage decisions are caused by certain factors such as firm tangibility, firm growth and firm age. From the study we found out that these three factors affect the conduct of leverage positively. Firm size and firm profitability had a negative impact on leverage conduct.

RECOMMENDATIONS

1. In carrying out financial leverage decision, the financial managers of public companies in Nigeria should deploy and properly measure size, age, growth, profitability and tangibility of their companies in order to have an optimum financing decision that minimize servicing cost.
2. Firm should carry out projects that would help enhance growth in all aspect of the firm. Growth in terms of revenue and assets would help increase the internal funding. This in turn will have a positive impact on the financial structure of the company as more of internally generated funds will be used instead of external borrowings.
3. Firms should not assume that making of profit shows good application of leverage as this was not found to be true from the analysis. Profitability could be as a result of factors such as assets tangibility.

4. Companies that are highly leveraged should use opportunity of their experience to reduce leverage while reducing their investments in total assets.

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EFFECT OF WORK-LIFE BALANCE ON EMPLOYEE SATISFACTION OF SELECTED MINISTRIES IN NIGERIA

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Abstract

This study investigated the effect of work-life balance on employees' satisfaction of selected ministries in Nigeria using the descriptive survey research design. The sample size comprised of the Federal Ministries in Anambra State, Nigeria and primary data by means of structured questionnaire were employed. Two research hypotheses were formulated and the one-sample t-test was used in validating the hypotheses of the study with the aid of Statistical Package for Social Sciences (SPSS). Findings showed that job sharing have positive and significant effect on employees' satisfaction. On the other hand, it was found that work stress has a negative and significant effect on employees' satisfaction in Nigeria. It was therefore recommended amongst others that organisations should clearly stipulate the extent of job flexibility so as to give employees adequate and proper orientation of the job beforehand.

Key words: *Work-life balance, Job sharing, flexibility, Employee satisfaction.*

1. Introduction

Staff contentment is an aspect of all labour market matches since it is a summary measure of utility at work (Bockerman & Ilmakunnas, 2012). Employment contentment is an individual's feelings or related views about work and its associated aspects (Jamal & Muhammad, 2012). Prior researchers upheld the nexus of staff job satisfaction and overall performance (Jamal & Muhammad, 2012), job related well-being, turnover, and job performance (Al-Zoubi, 2012). Researchers have highlighted these connections in various practical and theoretical studies (Crede, Chernyshenko, Bagraim, & Sully, 2010; Jaturanonda & Nanthavanij, 2011; Nyberg, 2010).

According to Jamal and Muhammad, (2012), unsatisfied employees may literally not provide their customers with adequate services and the long-run effect will be on organization's productivity. In responses to the employee satisfaction problems, Madipelli, Veluri-Sarma, and Chinnappaiah, (2013) pointed that work-life balance is hence a necessary ingredient to people management in other to promote employee satisfaction where he emphasized that work-life balance has become an important issue for both employees and organizations. The utilization of work-life balance practices to help reduce work-life conflict and increase positive employee appraisals of the organization (Lazar, Osoian & Ratiu, 2010). This can improve organizational structural, cultural and relational support for work and family (Kossek, Lewis & Hammer, 2010).

There is a scanty focus on employer driven work-life initiatives in Nigeria, mainly those implemented by large organizations to support higher-level managers and skilled professionals

(Kossek et al., 2010). The world has evolved since work-life balance programs first emerged, requiring employers to further mainstream work-life initiatives to respond to new societal changes ranging from economic to environmental and from health to technological (Kossek et al., 2010). As Burke (2010) noted, organizations face heightened competition on a worldwide basis, while employees are experiencing increasing performance pressures, and the hours employees spent at the workplace increased significantly between 2000 and 2013 (Kumar & Chakraborty, 2013). Furthermore, there is an ongoing struggle between employees and employers regarding work-life balance because some employees and employers do not understand that work-life balance is reciprocally beneficial (Kumar & Chakraborty, 2013). Hence the need for an in-depth study on the effect of work-life balance on employee satisfaction.

1.1 Statement of the Problem

Despite work-life programs having the tendencies to benefit organizations, they can also be an expensive investment, and for that reason, employers are likely to realize gains in situations where potential benefits outweigh expected costs (Konrad & Mangel, 2000). Researchers have examined employee work-life balance (Avgar, Givan, & Liu, 2011; Chawla & Sondhi, 2011; Darcy, McCarthy, Hill, & Grady, 2012; Dash, Anand, & Gangadharan, 2012). However, studies on work-life balance in Ministries and government parastatals in Nigeria appear to be relatively from few selected SMEs in Nigeria.

Prior studies on work-life balance and employee satisfaction employed the Pearson product moment correlation (PPMC) and regression analysis (Osisioma, Hope & Ilo, 2015; Muhammed, 2015; Azeem & Akhtar, 2014; Orogbu, Onyeizugbe & Chukwuemeka, 2015; Chiekezie, Nzewi, Emejulu & Chukwujama, 2016). Only a few current studies have concentrated on mean simple average and one sample Z-test. Against this backdrop, the study intends to investigate the effect of work-life balance in selected ministries in Nigeria. The main objective of the study is thus to investigate the effect of work-life balance on employee satisfaction of selected ministries in Nigeria. Specifically, the study seeks to:

- i. Ascertain the effect of job sharing and employee satisfaction.
- ii. Examine whether work stress have an effect on employee satisfaction.

2. REVIEW OF RELATED LITERATURE

2.1 Work-life balance

Work life balance (WLB) is referred to as flexible work arrangement that suites the employees both parents and non-parents to do a work that gives them the opportunity to balance work responsibility and personal responsibility. (Redmond Valiulis & Drew, 2006). Cascio (2009) sees WLB as an individual's ability with independence of age, gender of finding a life rhythm that allow them to combine their work with other responsibilities, activities or aspirations. Work life balance is basically a way of equating and balancing the ratio between work and other activities. Work-life balance has been categorized into four which are: flexible working arrangement (home working, compressed hours), Leave arrangement, dependent care assistance (Childcare

arrangements) and General services (Employment assistant programs) (De Cieri, Holmes, Abbott and Pettit, 2005, De Cieri & Bardoel, 2009).

Clarke, Koch and Hill (2004), refers WLB as generally associated with equilibrium between the amount of time and effort somebody devotes to work and personal activities, in order to maintain an overall sense of harmony in life. Clarke, Koch and Hill (2004), work-life balance is generally associated with equilibrium between the amount of time and effort someone devotes to work and personal activities, in order to maintain an overall sense of harmony in life. For a better understanding of work life balance, one should be aware of the different demands upon us and our personal resources, our time and our energy that can be used to address them. Research has shown that those that have control over their working environment tend to suffer less stress related ill health. Organizations therefore should implement various work-life balances to enable the workforce balance their work and family responsibilities and improve their wellbeing and be stress free.

The essence of work-life balance is to help both the employer and employee. For the employer, it will increase performance and reduce stress from the employee, on the other hand, the employee uses that opportunity to focus also on the family responsibilities and manage their work very well. Work life balance immanent from work-life conflict where employees cannot be able to perform their roles in the family because they have given all their time in the workplace. There is not compatible with their family roles, hence there is the need to balance it. In work life balance helps to reduce the amount of work done by each employee.

Lewis, Gambels and Rhona (2007) differentiate option for work-life balance, organizations can make policies that can bring work-life balance such policies are: job sharing, pay leave, self-roistering, flextime and compressed work hours. In attempt to include these policies in their organization, work-life balance is promoted and workers are satisfied and performance is high.

Job Sharing

Job sharing could be a versatile work possibility during which two or probably additional staff share one job. In several cases, a job-sharing position needs that the people concerned are willing to be contacted throughout the work week even on days they are doing no work so queries is also answered and therefore the coordination between the two or more individuals sharing an edge is maximized. Job sharing offers little businesses an opportunity to retain valued employees who are either approaching retirement or beginning families and would contemplate departure if more flexible choices were not created available. Job sharing can even facilitate and/or eliminate the necessity to coach new staff if a valued worker were to go away from the company. It is discouraging to managers who might worry that it could lead on to confusion, additional paperwork, and a number of different hassles.

Managers are expected to pay attention to however the system is working. several organizations have found that staff who share jobs are appreciative for the work chance and, therefore, work harder. Job sharing usually leads to improved performance appraisals, additional participation and volunteerism from those employees who make the most of the advantages of job sharing. It conjointly looks that corporations is also rewarded for permitting employees to balance family and work job sharing by having focused, appreciative, and extremely productive workers. Job sharing

permits companies to retain valued employees who do not wish to figure full-time. In today's work force, many staff suffer from work overload, which may end in burnout. This can be particularly common with women who have nerve-racking positions at work and a family to worry for at home. Job sharing is one answer for girls or men who got to juggle the roles of the chief family provider. It has been found that job sharing arrangements also may shield workers from burnout whereas maintaining productivity.

Work Stress

Work stress is a condition that affects the emotions, thought processes, and the thinking process. The gap between the strain of labour with existing resources can cause work stress and create a situation where an employee feels negative and dissatisfied. Work stress, during this current situation, may cause role ambiguity, overwork, role conflict, and time pressure while performing from home, which may scale back job satisfaction (Kim, Julia, Lonnie, & Susan, 2019). Work stress is another key predictor that affects job satisfaction and features a vital impact on job satisfaction (Hsu, Chyi, Chien, Ya, Tzu, & Chih., 2019). The various results as revealed by Chao, Ming, Rong, Cing, and Chung, (2015) show that job stress has a negative effect on job satisfaction.

2.2 Employee Satisfaction

Staff satisfaction is one amongst the foremost wide studied outcomes of employee performance. Job Satisfaction could be a general expression of employees' positive angles engineered up towards their jobs (Man, Modrak, Dima, & Pachura, 2011). Job satisfaction is outlined conjointly because the extent to which a worker is content with the rewards he or she gets out of his/her job, significantly in terms of intrinsic motivation (Statt, 2004 cited in Aziri 2011). However, employee satisfaction is not the same as motivation; rather it is concerned with the attitude an individual has regarding a particular job.

Workers maintain an attitude towards their jobs as a result of diverse features of their job, social status that they've gained about their jobs and experiences in their job environment. An individual will be satisfied with a job to the extent to which the job provides those things or results that he/she considers important. In addition, employee satisfaction refers to the attitude and feelings people have about their work. Positive and favourable attitudes towards the job indicate employee satisfaction; negative and unfavourable attitude towards the job indicate job dissatisfaction (Armstrong, 2012). Luthan cited in Tella, Ayeni & Popoola (2007) posit three important dimensions to job satisfaction.

- a. Employee satisfaction is an emotional response to a job situation, and as such it cannot be seen; it can only be inferred. It is determined by how well outcome meet or exceed expectations.
- b. Employee satisfaction causes a series of influences on various aspects of organisational life. The influence of job satisfaction on employee can be seen in increased productivity, loyalty and reduced absenteeism.
- c. Employee satisfaction is a general expression of workers positive attitudes built up towards their jobs. Workers maintain an attitude towards their jobs as a result of diverse features of their job, social status that they have gained about their jobs and experiences in their environment. This attitude can also be negative towards work.

These dimensions suggest that job satisfaction is a reaction that workers hold about their jobs. High job satisfaction implies that the employees like the job, whereas low job satisfaction implies that the employees dislike the job. Employee satisfaction therefore helps to improve employee job performance and can be determined by the difference between employee's expectation about job outcome and what the job actually offer.

2.3 Theoretical Framework

The study is anchored on Social Exchange Theory by Blau (1964). This theory states that for every relationship, there is an expectation in exchange to the commitment which balances the relationship. Social Exchange theory posits that human relationships are formed by comparisons of alternatives. Employees are allowed to make rational choices that suite them. It explains how a person feels about a relationship with another person. It implies a two-sided, mutually contingent and rewarding process or exchange. This theory has to do with self-interest and interdependence. It means that the two actors (employee and employer) value each other and therefore allow some sense of choice and freedom to exist between them. Social Exchange theory suggests that employees balance their relationship with their work in exchange to flexibility of work leading to high performance.

Work flexibility serves as the tool used by the employee and management to equate employee performance. Social Exchange theory is concerned with the chances of having a better relationship hence where the management does not allow the employees to define the best approach to their job, the relationship cannot be balances, the ratio is incomparable and therefore the performance is low. In this theory, Blau, (1964) posits each party supplies the need of the other party and on this ground, there is a mutual relationship.

The relevance of this theory to the study is that work flexibility increases performance of the employees of selected Federal Ministries in Anambra state, Nigeria if the management is fair enough by allowing the workers to go on leave as at when due, allows job sharing and encourage work-life balance. The employees see the relationship with the management and the work as balanced and hence, put in their best to maximize performance. Work flexibility balances the ratio and the relationship between workers and their jobs. Employees perform higher when they are allowed to make choice on how, where and when to do their work.

2.4 Empirical Review

Irawanto, Khusnul, and Kenny. (2021) investigated several potential predictors of job satisfaction during working from home from the impact of COVID-19 such as work–life balance and work stress. Using a quantitative approach, 472 workers who were forced to work from home all over Indonesia participated, and the responses were analysed using Smart-PLS software. The study revealed that working from home, work–life balance, and work stress have a significant effect, both directly and indirectly, on job satisfaction. The study also found that working from home as a new pace of work can sustain job satisfaction as the current working atmosphere for Indonesian workers.

Khaled, (2019) investigated the relationship between work-life balance, happiness, and employee performance, A questionnaire-based Survey research design was employed in the study. The sample size of the study was 289 employees from the (Med Pharma), Pharmaceutical industries in Jordan, Multiple regression was conducted to examined the research hypotheses. The results indicated that work-life balance and happiness positively and significantly affect employee performance. However, job satisfaction non-impact in employee performance. The results have enormous implication for the pharmaceutical industries sector in Jordan.

Chiekezie, Nzewi, Emejulu and Chukwujama (2016) conducted research on the extent to which work-life balance influence job performance of selected commercial banks in Anambra State, Nigeria. They adopted descriptive study and used both primary and secondary data to collect the data. Pearson's product moment correlation was used to formulate the hypothesis. The finding reveals that Work-life balance does not contribute to organizational performance. The research concludes that inability to accomplish preferred balance in work and personal life has consequences hinging on general welfare and development of individual worker and organization.

Orogbu, Onyeizugbe and Chukwuemeka (2015), conducted research on work-life balance and employee performance in selected commercial banks in Lagos State Nigeria. The study adopted a descriptive survey research design, where the population of the study was 759 and the sample size 262 using Taro Yamane's formula. Pearson's product moment correlation and regression analysis were used to test the hypothesis. Cronbach Alpha was used to test for the reliability of the instrument. It was found that there is a significant positive relationship between leave policy and service delivery. The findings revealed that leave policy motivated employee ability to deliver services efficiently and effectively.

Muhammed (2015), investigated on the influence of work-life balance on Employee performance in education section in Pakistan. The study used 150 sample sizes from eight Universities in Islamabad and Rawalpindi. Regression and moderation analysis were performed by the use of Statistical Package for Social Science (SPSS). The finding reveals that work life balance has significant positive effect on employee performance. The study recommends that the University management should consider implementing work-life balance policies.

Osisoma, Hope and Ilo (2015) investigated on flexible working hours and employee performance in selected hospitals in Awka metropolis, Anambra State, Nigeria. The study examined the nature of relationship between flexible working hours and employee performance in selected hospitals in Awka metropolis. The research hypotheses were tested with the Pearson's Product Moment Correlation Coefficient and the study adopted survey research design. The study reveals that there is a positive relationship between flexible working hour and employee performance.

Azeem and Akhtar (2014) researched on the influence of work life balance and job satisfaction on organization commitment of health care employee. Questionnaire was distributed among 275 respondents in healthcare sector. Statistical Package for Social Science (SPSS) was used to analyse the quantitative data including reliability and correlation. The finding reveals that employees in healthcare sector have a moderate level of perceived work life balance, job satisfaction and commitment and a positive relationship between job satisfaction and organization commitment.

Dissanayaka and Ali (2013) investigated on impact of work-life balance on employee performance. The aim of the study was to analyse the relationship between work-life balance and employee performance. Questionnaires were distributed to 96 employees. Pearson's product moment correlation was used to analyse the data. The finding was that there is a positive relationship between work life balance and employee performance.

Al-Rajudi and Al-Habil, (2012) investigated on the Impact of flexible work arrangements on worker's productivity in information and communication technology sector in Gaza. Questionnaire was distributed to 196 employees. Pearson's product moment was used to analyse the collected data with the aid of Statistical Package for Social Science (SPSS). The finding reveals the presence of the positive impact of flexible work arrangement on worker's productivity.

2.5 Gaps in Knowledge

The gaps identified in the study are in two-folds; *Firstly*, Studies on work-life balance had been conducted both locally and internationally, however, studies on work-life balance in Ministries and government parastatals in Nigeria appear to be relatively thin as most studies focused on private establishments. Also, only a few current studies have concentrated on mean simple average and small sample t-test. Against this backdrop, the study intends to investigate the effect of work-life balance in selected ministries in Nigeria (Osisioma, Hope & Ilo, 2015; Muhammed, 2015; Azeem & Akhtar, 2014; Orogbu, Onyeizugbe & Chukwuemeka, 2015; Chiekezie, Nzewi, Emejulu & Chukwujama, 2016). The study therefor seeks to bridge the gaps identified.

3. Methodology

The study employs the descriptive survey research design. A survey research design is one in which a group of people or items is studied collecting and analysing data from only a few people or items considered to be representative of the entire group (Nworgu, 2006). The population of the study comprises employees in selected Federal ministries in Anambra state. Prior to this study, there is no documented number of staff in the study ministries. However, the study concentrates its population of the study to focus on 120 civil servants representing all Eight (8) Ministries in Anambra state. That is, 15 employees representing each Ministry. The Ministries which make up the population size is given below:

Table 1: List of Federal Ministries in Anambra State, Nigeria

SN	Ministries	Location
1	Federal Inland Revenue Services (FIRS)	Awka/Onitsha/Nnewi
2	Security and Exchange Commission (SEC)	Onitsha
3	National Directorate of Employment (NDE)	Awka
4	Industrial Training Fund (ITF)	Awka
5	National Population Commission (NPC)	Awka
6	National Agency for Food and Drug Administration Control (NAFDAC)	Onitsha
7	National Youth Service Corp	Awka
8	Central Bank of Nigeria (CBN)	Awka

Source: Field survey, 2021 (<https://www.medianigeria.com>)

Given the size of the population, the study employed the whole population size as sample. This is in consonance with the approach adopted by Nwankwo (2010). Data for the study was collected through primary source. Structured questionnaire was used in collecting the primary data. The questionnaire was structured on a 4-point Likert scale of Strongly Agree, Agree, Disagree and Strongly Disagree. The ranges of scores were weighted as 4, 3, 2, and 1 respectively. The researcher administered copies of the instruments directly to the respondents with the help of one trained research assistants. The research assistant was briefed on the method of data collection and also in terms of distribution and retrieval of the instruments. The distribution and retrieval of the instrument lasted for three days.

Construct validity was used in validating the instrument. This was carried out by subjecting the instrument to factor analysis with the use of SPSS version 23. The validity test was done by giving out 80 items of questionnaire to civil servants in Awka, Anambra State, Nigeria to ensure accuracy of the sampling adequacy; the result is as shown below.

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.811
Bartlett's Test of Sphericity	Approx. Chi-Square	479.127
	Df	45
	Sig.	.000

Source: SPSS Ver. 23.

The KMO and Bartlett's Test result revealed a Kaiser-Meyer – Olkin Measure of Sampling Adequacy value of 0.811. According to the measurement of appropriateness of Factor Analysis, the KMO and Bartlett's Test showed a meritorious result. Hence, the instrument is considered valid. For reliability of primary data, a statistical analysis was conducted to determine the internal consistency of the items of the questionnaire. This was done using Cronbach Alpha. Pallant (2007) stressed that when a psychometric scale is used, the internal consistency could be checked using Cronbach alpha.

Table 3: Cronbach's Alpha Values for Job sharing

Reliability Statistics	
Cronbach's Alpha	N of Items
.898	5

Source: SPSS ver. 23.

The Cronbach's alpha on the test of measurement reliability scale for the effect of job sharing on employee satisfaction selected Ministries in Nigeria showed an alpha level of .898 which is above the generally accepted threshold of .70. Thus, the measurement is reliable.

Table 4: Cronbach's Alpha Values for Work stress

Reliability Statistics	
Cronbach's Alpha	N of Items
.792	5

Source: SPSS ver. 23.

The Cronbach's alpha on the test of measurement reliability scale for the effect of work stress on employee satisfaction selected Ministries in Nigeria showed an alpha level of .792 which is above the generally accepted threshold of .70. Thus, the measurement is reliable.

The data collected was analysed statistically using mean scores and standard deviation. The decision rule is that any participants' response with the mean rating of 2.50 and above was considered as agreement with the statement and therefore accepted while any mean below 2.50 rating was considered as disagreement with the statement and therefore rejected. The hypotheses formulated to guide the study was tested using one sample Z-test at .05 significance level. The one sample Z-test model is given below:

$$Z = \frac{x - \mu}{\sigma / \sqrt{n}} \text{ at } n-1 \text{ df}$$

Where:

Z	=	Z-test
x	=	sample mean
μ	=	Population means
σ	=	Population standard deviation
n	=	Sample size
df	=	Degree of freedom (usually n-1)
σ / \sqrt{n}	=	Population Standard error

4. Data Presentation and Analysis

Data presentation and analysis focuses on the presentation, analysis and test of related hypotheses which guides the study. The final sample comprised of 120 observations of Ministries included in the empirical analysis. This section is sub-divided as follows: 4.1, shows the descriptive (univariate properties) statistics and analysis of research questions for the respondents. 4.2, Test of hypotheses. 4.3 is the discussion of findings emanating from the study.

Table 5: Descriptive Statistics of Job Sharing and Employee Satisfaction

Investigative questions	SA	A	D	SD	N	Mean	Std. D
I have the time and energy in my life to read books that interest me hence I respect my work time and put in my best.	79	11	7	23	120	3.22	1.204
Sharing a single project with my work partners gives me no excuse for absenteeism or lateness in job delivery.	79	19	15	7	120	3.42	.922
My work week is being divided in half and shifts is alternated so one employee works three days in one week and two in the next week.	71	13	17	19	120	3.13	1.166
This organisation clearly stipulates how flexible I am allowed to work. This gave me more attachment to the job and boosting my job satisfaction.	80	0	16	24	120	3.13	1.263
Outsourcing some job routines gives me space to free up my desk and perform better on the aggregate.	89	10	13	8	120	3.50	.935
Valid N (listwise)					120		

Source: Field Survey, (2021).

Table 5 shows the descriptive statistics of investigative questions which indicates that the mean statistics for all five (5) questions scores higher than 2.50. Also, the summary statistics also reveals a grand mean value of 3.28 for the investigative questions which is above the decision threshold hence to a great extent, job sharing affects employee satisfaction of selected Ministries in Anambra state, Nigeria.

Table 6: Descriptive Statistics of Work Stress and Employee Satisfaction

Investigative questions	SA	A	D	SD	N	Mean	Std.D
I have suffered less stress related illness since I joined this organization hence giving me better job performance. So, I would be very happy to spend the rest of my career with my organisation.	102	18	0	0	120	3.85	.359
My organization promotes the policy of flex time and compressed work hours to combat work stress.	96	16	8	0	120	3.73	.576
I feel so satisfied knowing that I have the time and energy in my life to read books that interest me. Hence, I feel a positive connection with my organisation, and I feel that I perfectly fit into the organisation.	71	17	7	25	120	3.12	1.217
My organization has a policy for all expense paid vacation for staff once very year.	74	18	13	15	120	3.26	1.081
Most times, I really feel this organisation's problems are my own and I work very hard to ensure its goals are achieved	62	27	18	13	120	3.15	1.042
Valid N (listwise)					120		

Source: Field survey, (2021)

Table 6 shows the descriptive statistics of investigative questions which indicates that the mean statistics for all five (5) questions scores higher than 2.50. Also, the summary statistics also reveals a grand mean value of 3.42 for the investigative questions which is above the decision threshold hence interpreting that work stress effect employee satisfaction.

H₀: There is no significant effect of job sharing and employee satisfaction.

Table 7a: One sample Z-test

Descriptive Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
RQ1	120	20.2500	4.56374	.41661

Source: SPSS Ver. 23

Table 7b

One Sample Z-test

z_statistic	p_value	cohens_d
-2.40032	.01638	-.21912

Number of cases read: 1 Number of cases listed: 1

Source: SPSS, Vers. 23

Table 7a-b above shows a Z-test statistic value of -2.40032 which was tested at .05 significance level; the Probability value was .01638. Hence, ($p < .05$). Thus, the study finds evidence to refute the null hypothesis and accept the alternate. Thus, there is a significant effect of job sharing and employee satisfaction amongst selected Ministries in Anambra state, Nigeria.

H₀: Work stress have no significant effect on employee satisfaction.

Table 8a: **One sample Z-test**

Descriptive Statistics

	N	Mean	Std. Deviation	Std. Error Mean
RQ2	120	19.6333	4.52803	.41335

Source: SPSS ver. 23

Table 8b

One Sample Z-test

z_statistic	p_value	cohens_d
-2.41925	.01555	-.22085

Number of cases read: 1 Number of cases listed: 1

Source: SPSS, Vers. 23

Table 8a-b above shows a Z-test statistic value of -2.41925 which was tested at .05 significance level; the Probability value was .01555. Hence, ($p < .05$). Thus, the study finds evidence to refute the null hypothesis and accept the alternate. Thus, work stress has significant effect on employee satisfaction amongst selected Ministries in Anambra state, Nigeria.

5. Discussion of Results

The core of the current study is to investigate the effect of work-life balance on employee performance of selected Ministries in Anambra state, Nigeria. After the test of hypotheses, the current study found that there is a significant effect of job sharing and employee satisfaction. In line with this finding is Azeem and Akhtar (2014) who examined the influence of work life balance and job satisfaction on organization commitment of health care employee. And found that employees in healthcare sector have a moderate level of perceived work life balance, job satisfaction and commitment and a positive relationship between job satisfaction and organization commitment. Also, in agreement with the finding is Dissanayaka and Ali (2013) who investigated

on effect of work-life balance on employee performance. And found that there is a positive relationship between work life balance and employee performance.

Finally, the current study also found that work stress has significant effect on employee satisfaction. This finding is consistent with Al-Rajudi and Al-Habil, (2012) who investigated on the effect of flexible work arrangements on worker's productivity in information and communication technology sector in Gaza using PPMC and found that there is presence of positive effect of flexible work arrangement on worker's productivity.

6. Conclusion and Recommendations

The study focused on work-life balance and employee satisfaction of selected Ministries in Anambra state, Nigeria. The study sees work-life balance as a flexible work arrangement that suites the employees both parents and non-parents to do a work that gives them the opportunity to balance work responsibility and personal responsibility. Related literatures were reviewed to identify possible gaps to be filled by the study. The study was anchored on the social exchange theory. The study concluded generally that work-life balance has significant effect on employee satisfaction and by extension, employee performance. The study makes the following recommendations:

1. Seeing that job sharing positively effect employee satisfaction, it is highly recommended that organisations clearly stipulate the extent of job flexibility so as to give employees proper notice understanding on the job beforehand.
2. The Ministries are also advised to implement programmes such as “all-expense paid vacations”, Team bonding trip etc, to cushion the effect of work stress which affects employee satisfaction and performance negatively.

The study makes contribution to the existing body of knowledge in the area of filling the knowledge gap discovered in literature that there appear to be dearth of empirical studies that examined Ministries in Anambra state. Also, the study made empirical revelation about the effect of work-life balance on employee satisfaction. Given that these findings are empirically backed, it will aid the organization in making policy decisions and aid employee performance. The study was not holistic enough as to cover all Ministries in Nigeria. Intending researchers may decide to look at other states and also comparative analysis of two or more states in Nigeria. Other researchers could also focus on studying the schools in other to find out the true situation of things as it relates to work-life balance.

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ACCOUNTING CONSERVATISM AND FIRM STRUCTURE IN NIGERIA: EVIDENCE FROM PUBLICLY LISTED MANUFACTURING FIRMS

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ABSTRACT

This paper assessed the relationship between accounting conservatism and firm structure in Nigeria. Ex post facto research design was adopted and a sample of thirty-eight (38) publicly listed manufacturing firms was employed. Data of accounting conservatism (earnings accrual) and firm structure (equity-to-asset and asset tangibility ratios) was obtained from 2012-2020. The Fixed (FE) and Random effects (RE) regression statistical technique was used. We find evidence that a firm with more conservative financial disclosure of its earnings accrual adjusts its asset structure towards the company's target more rapidly; this in particular is common for publicly listed manufacturing firms that rely on external financing for adjustment. Moreover, we found that the level of accounting conservatism positively and significantly affects the firm structure and this effect arises due to debt issuance. Overall, the paper suggests that the level of accounting conservatism plays a vital role in enhancing under-levered firms' adjustment of asset structure of publicly listed manufacturing firms in Nigeria.

Keywords: Accounting conservatism; Asset structure; Cashflow; Annual stock returns; Firm structure

JEL Classification: M40; M49

1. INTRODUCTION

In reality, the market reacts to bad and good news from accounting conservatism information in diverse ways. Predominantly, the reactions by the market hover around the levels of under-statement of gains/assets and over-statement of losses/ liabilities in the financial statements of corporations (Govcopp, 2020; Asiriwa, Akperi, Uwuigbe, Uwuigbe, Nassar, Ilogho & Eriabe, 2019; and Odia & Osazevbaru, 2018). Accounting conservatism according to Houcine (2013); Zhong, and Li (2017), are the process used by corporations in tumbling the risks in accounting disclosure arising from events like implementation of poor decisions and contracts. Similarly, Basu (1997) sees accounting conservatism as the earnings or the market reactions to bad news than good news.

Explicitly, the likely relationship between accounting conservatism and firm structure occurs from the existence of extant literature enumerating an association between the knowledge of the directors in forestalling projects delivery time, benefits, profitability, and their exposure to such information stimulating markedly risky investment decisions (Amran & Manaf, 2014; and Ibrahim, Wang and Hailu, 2019). Prior studies (see Habib & Hossain, 2013; Alkurdi, Al-Nimer

& Dabaghia, 2017; Odiya & Osazevbaru, 2018; Asiriwuwa, *et al*, 2019) found that the firm structure is positively influenced by accounting conservatism.

By and large, the firm structure can take several forms but not limited to ownership, asset and capital structures (see Ahmed & Duellman, 2011; Gao, 2013; Garcia-Lara, Garcia-Osma & Penalva, 2014; Ajina, Sougne & Lakhali, 2015; and Asiriwuwa, *et al*, 2019); however, emphasis in this paper was on the asset structure. Specifically, asset structure refers to a blend of a corporation's short and long-term tangible and intangible assets investments in an accounting period (Dalvi & Mardanloo, 2014). Generally, the asset structure is employed in assessing the business complexity or operating risks arising from a firm's investment.

In the literature, how the market reacts to bad and good news from accounting conservatism information are usually poised on numerous factors such as the cash flow from operations, stock returns, and changes in operating cash flows (Felix & Umanhonien, 2015; and Dalvi, & Mardanloo, 2014). This view is clearly captured by the Ball and Shavakumar models of how the market reacts to bad and good news from accounting conservatism information. On the other hand, asset structure can be measured on the basis of several ratios such as the equity-to-assets, non-current assets, intangible assets, receivable assets, inventory and receivable assets, and asset tangibility amid others (Odiya & Osazevbaru, 2018).

Furthermore, while most empirical studies had focused on accounting conservatism and capital structure, there are relatively few studies that had focused on accounting conservatism and asset structure using Givoly, Hayn, Beaver and Ryan model. The model measures the market value of equity-to-book value of total-equity, current accrual and earning accrual. The import of this study lies in its contribution to knowledge on how accounting conservatism affects the firm structure of publicly listed corporations on the floor of Nigerian Exchange Group (NEG). Consequent upon this, the following research hypotheses were formulated:

- Ho₁: Accounting conservatism (earnings accrual) has no positive and significant effect on firm structure (equity-to-assets).
- Ho₂: Accounting conservatism (earnings accrual) has no positive and significant effect on firm structure (asset tangibility).

2. REVIEW OF RELATED LITERATURE

2.1 *Accounting Conservatism*

In relation to asset structure, accounting conservatism serves as a valuable means of reducing the agency problem as it restrains the opportunistic behaviour of management. Watts (2003) opined that accounting conservatism decreases the ability of management to overstate firms' net assets and earnings. For instance, accounting conservatism deters management from investing in projects with negative net present value since management may be incapable of deferring loss recognition to the future (Ball & Shivakumar, 2005).

Watts (2003) sees accounting conservatism as a differential verifiability needed for losses and gains recognition. Similarly, Hille (2011) asserted that accounting conservatism involves an asymmetry between the substantiation of overstated losses and overstated gains. Thus, when a differential verifiability is accorded to gains, they are considered as good news than bad news in corporate reporting (Ibrahim, *et al*, 2019). The focus on 'news-dependent' conservatism is substantiated, given that timely loss recognition encouraged by accounting conservatism is one of the vital determinants of earnings accrual.

Empirical studies indicated that the firm structure is positively influenced by accounting conservatism. The study by LaFond and Watts (2008) showed a positive association between the level of accounting conservatism and firm structure. Similarly, Cheon (2003) found evidence that accounting conservatism (earnings response) positively and significantly affect the ownership structure of firm. The rationale for the positive association between accounting conservatism and firm structure may be connected with the fact that the structure of the firm plays crucial role in investment decisions.

The empirical results of Habib and Hossain (2013) revealed that firm structure is positively and significantly impacted on by accounting conservatism. In the same vein, Mohammadi, Heyrani and Golestani (2013) using a sample of 300 listed companies on the Tehran Stock Exchange found evidence of a positive and significant link between accounting conservatism and firm structure. In a related study, Habib and Hossain (2013) examined the connection between accounting

conservatism and firms' capital structure decisions. Findings indicated that accounting conservatism positively and significantly impacts on firms' leverage structure.

Furthermore, the empirical studies of Alkurdi, *et al* (2017); Odia and Osazevbaru (2018); Santhosh and Yong (2018); Asiriwuwa, *et al* (2019); Govcopp (2020); and Abbas, Yasin, Ramazan and Hamed (2020) showed that the level of accounting conservatism positively and significantly affects the firm structure. In this paper, accounting conservatism was measured via earnings accrual ratio; this measure of accounting conservatism is similar to those employed in the studies of Mohammadi, *et al*, (2013); Govcopp, (2020); and Abbas, *et al* (2020).

2.2 Firm Structure

Firm structure attributes such as the asset, ownership, capital, affect accounting conservatism. Broadly speaking, the asset structure is used in evaluating the complexity or operating risks emanating from a corporation's investment. In this paper, one component of the firm structure was used – asset structure. Asset structure as observed by Dalvi and Mardanloo (2014), is a mixture of the short and long-term tangible and intangible assets of a corporation in a fiscal period. Thus, firm structure can be seen as the formation or the composition of the ownership, capital, or asset of a corporation.

Prior literature (Gao, 2013; Garcia-Lara, *et al*, 2014; Asiriwuwa, *et al*, 2019; Govcopp, 2020; Abbas, *et al*, 2020) support the significant effect of the firm structure attributes on the level of information disclosure by corporations. For instance, if the structure of the firm is viable, it may greatly affect the functioning and quality of financial disclosure of the corporation. There are empirical evidence to support the association between the firm structure and accounting conservatism (Alkurdi, *et al*, 2017; Asiriwuwa, *et al*, 2019; and Govcopp, 2020).

Several accounting ratios have been used to measure asset structure of the firm such as equity-to-asset, asset tangibility, non-current asset, intangible asset, inventory asset, receivable asset, inventory and receivable asset ratios among others. However, in this paper, asset structure was measured using two (2) of these ratios *inter-alia*, asset tangibility and equity-to-asset; this measure

of firm structure is similar to those used in the studies of Mohammadi, *et al*, (2013); Asiriwa, *et al*, (2019); and Odia and Osazevbaru, (2018).

2.3 Theoretical Framework

There are several theories explaining the relationship between accounting conservatism and firm structure such as stewardship, stakeholder, resource dependency, transaction cost, and information asymmetry, among others. However, this paper is anchored on the agency theory; the theory seeks to explain the self-interested actors (agents) who rationally want to maximize their personal gains over the interests of the owners of wealth (principals). This results to the agency problem between the agents and the principal (Donaldson & Davies, 1991). The theory acknowledges that corporations are made up of the principal and agent.

The agent is working for the principal, and he reimburses the agent for services rendered. According to Vladu and Matis (2010), due to the separation of ownership from management, conflict of interest may occur. Within the structure of a corporation, agency relationship exists between the principal and the agents. There are three (3) forms of agency costs as noted by Jensen and Meckling (1976) - bonding, residual and monitoring. These costs (bonding, residual and monitoring) reduce the accounting disclosure of the corporation.

As a matter of fact, in order to reduce information asymmetry or have an efficient level of accounting conservatism practices, management strives to incur lesser costs, thereby improving shareholders' wealth (Abdullah & Valentine, 2009; and Al-Malkawi & Pillai, 2012). There are theoretical evidence, supporting the relationship between accounting conservatism and firm structure. The theoretical perspective guiding this study is linked to the idea that firms with a good structure may have an efficient level of accounting conservatism practices than those without it.

3. RESEARCH METHODS

This study adopted the *ex-post facto* research design because the study assessed variables that are linked with specific kind of occurrence by evaluating past events of previously existing settings. The variables of interest are accounting conservatism (proxied by earnings accrual ratio) and firm

structure (asset tangibility and equity-asset ratios) in the financial statements of listed manufacturing firms.

The study population comprised of listed manufacturing firms in Nigeria as of 2020; however, as of 31st December, 2020, there are forty-eight listed manufacturing firms on the floor of the Nigerian Stock Exchange (NSE, 2020). A multi-stage sampling method was used in selecting the sample of the study. *First*, a probabilistic sampling (Taro-Yamane) was used in arriving at the sample size, resulting to forty-three firms; *second*, a convenience sampling method was employed in selecting a sample of thirty-eight firms out of the forty-eight firms, representing 79% of the entire population.

The study period covered 2012-2020 financial years. Secondary data were obtained from the financial statements of the listed manufacturing firms. The study builds on existing models of Ball and Shavakumar (accounting conservatism model) and the Givoly, Hayn, Beaver and Ryan (firm structure) models. In the light of this, the empirical models are estimated as follows:

$$assetan = F(earacc) \quad eq.1$$

$$eqass = F(earcc) \quad eq.2$$

Equations 1-2 showed the association between accounting conservatism and firm structure measures. Given equations 1-2, equations 3-4 were re-estimated in their explicit forms:

$$assetan_{it} = \alpha_0 + \alpha_1 earacc_{it} + \varepsilon_{it} \quad eq.3$$

$$eqass_{it} = \alpha_0 + \alpha_1 earac_{it} + \varepsilon_{it} \quad eq.4$$

Where: *earacc*=earnings quality; *assetan*=asset tangibility ratio; *eqass*=equity-to-asset ratio; α_0 - α_7 =coefficients of regression; *e*=error term; *i*=1, *t*=time-frame.

Table 1: Measurement of Variables

S/N	Variables	Measurement
1	Earnings quality ratio (Independent Variable)	Computed as net cash from operating activities divided by net income
2	Asset tangibility ratio (Dependent Variable)	Computed as non-current assets divided by total assets (percentage)
3	Equity-to-assets ratio (Dependent Variable)	Computed as the total equities divided by the total assets (percentage)

Source: Compiled by the Researchers, 2021

Accounting conservatism (earnings quality ratio) is the independent variable while the firm structure (asset tangibility and equity-to-assets ratios) is the dependent variable of the study. The data obtained were analysed in phases: Summary of descriptive statistics (mean, median, minimum and maximum values, standard deviation, kurtosis and skewness, and Karl Pearson correlation); Post-estimation test (Breusch-Pagan/Cook-Weisberg); and ordinary least square, fixed and random effect regression and Hausman specification tests. A-priori expectations are that accounting conservatism will be positively influenced by firm structure. The statistical analysis was carried out via STATA 13.0 statistical package.

4. RESULTS AND DISCUSSION

Table 2: Summary Statistics of the Variables

Statistics	Earnings Quality (<i>earacc</i>)	Asset Tangibility (<i>assetan</i>)	Equity-to-Asset (<i>eqass</i>)
Mean	0.6087	0.3764	6.7665
Median	0.6679	0	6.2612
Maximum	2.7280	2.8801	2.1919
Minimum	0	0	0
Standard Deviation	0.1712	0.1735	1.9348
Skewness	-0.9158	3.6603	0.1594
Kurtosis	4.4790	1.8567	1.5773

Source: Computed by Researchers, via STATA 13.0

Presented in Table 2 is the summary statistics of the variables (earnings quality ratio – *earacc*, asset tangibility – *assetan*, and equity-to-asset ratios – *eqass*). From the result none of the variables showed average mean value; this is expected due to the characteristics of the period studied (2012-2020), earmarking improvement in disclosure requirement by firms orchestrated by the International Financial Reporting Standards (IFRS).

The standard deviation values are .1712 (*earacc*), .01735 (*assetan*), and 1.9348 (*eqass*). The standard deviation values were not too far from each other, indicating that the studied firms' accounting conservatism and asset structure measures are closely related in terms of disclosure. Besides, all panel data-series of *assetan* and *eqass* displayed non-zero skewness except *earacc*. All variables had positive kurtosis as shown by the positive values attached to their coefficients. Again, all the variables have a normal distribution as shown in the kurtosis values; this suggests that variables satisfy the normality condition.

Table 3: Karl Correlation of the Variables

	Earnings Quality	Asset Tangibility	Equity-to-Asset
Statistics	<i>(earacc)</i>	<i>(assetan)</i>	<i>(eqass)</i>
<i>earacc</i>	1.000		
<i>assetan</i>	0.1453	1.000	
<i>eqass</i>	0.0142	0.0776	1.000

Source: Computed by Researchers, via STATA 13.0

Table 3 indicates that correlation between accounting conservatism and the structure of firm is positive as captured in the Karl Pearson r values. A-priori expectations are that accounting conservatism will positively relate with the structure of firm; the result conforms to a-priori expectation. Moreover, the Pearson coefficient did not exceed the maximum benchmark of 0.8, as suggested by Gujarati (2003), indicating the nonexistence of multicollinearity among the variables of the study.

Table 4: Breusch-Pagan and Cook-Weisberg Results of Variables

Ho: Constant Variance		Variables: Fitted values of csrdi	
Chi ² (1)=	45.10	Prob. > Chi ² =	0.0000

Source: Computed by Researchers, via STATA 13.0 software

The Breusch-Pagan/Cook-Weisberg result (Table 4) showed that accounting conservatism and firm structure fit-well in the estimated models, since it is statistically significant at 5% level; an indication of the nonexistence of heteroskedasticity problem in the empirical models of the study.

Table 5: Accounting Conservatism (earnings quality) and Firm Structure (asset tangibility)

<i>Estimator</i>	<i>OLS</i>		<i>Fixed Effect</i>		<i>Random Effect</i>	
<i>Variable</i>	<i>Coef.</i>	<i>Prob.</i>	<i>Coef.</i>	<i>Prob.</i>	<i>Coef.</i>	<i>Prob.</i>
assetan	.1367*	0.0001	.1383*	0.0001	.1457*	0.0001
	(2.84)		(2.88)		(2.45)	
R-Squared	0.905					
R-Squared Adj.	0.879					
Prob. F.	0.000					
R-Squared (within)			0.8308		0.9080	
R-Squared (between)			0.7272		0.8272	
R-Squared (overall)			0.779		0.8676	
Wald Ch2					14.88	
Prob. Ch2					0.000*	
Hausman Test			Chi2(2) = 0.78		Prob>Chi2= 0.4788	

Source: Computed by Researchers, via STATA 13

In model 1, we found that accounting conservatism (earnings quality) is highly significant at 1% level in explaining firm structure (asset tangibility). Output of OLS shows that asset tangibility (*assetan*) has a larger beta coefficient in absolute terms using FE and RE. More so, the beta value measures the degree to which the explanatory variable affects the dependent variables. Using the OLS and RE, coefficient of firm structure is .1367 & .1457 respectively, indicating that when publicly listed manufacturing firms' employ accounting conservatism, it will lead to approximately 14.57% change in their level of firm structure.

Furthermore, the beta coefficient for FE is .1383 but both the FE and RE are significant at 5% levels. Impliedly, when publicly listed manufacturing firms' employ accounting conservatism, it will lead to approximately 13.83% change in their level of firm structure. The result of Hausman specification test is Chi2(2)=0.8 and p-value= 0.4788; this means that the fixed effect is more efficient than random effect. Since the Wald Ch²-statistics is 14.88 with a probability value of 0.000, it implies that it is statistically significant, leading to the rejection of the null hypothesis and acceptance of the alternate hypothesis that there is a positive and significant relationship between

accounting conservatism (earnings quality) and firm structure (asset tangibility) among listed manufacturing firms in Nigeria.

Table 6: Accounting Conservatism (earnings quality) and Firm Structure (equity-to- asset)

<i>Estimator</i>	<i>OLS (Obs.=378)</i>		<i>FE (Obs.=378)</i>		<i>RE (Obs. =378)</i>	
<i>Variable</i>	<i>Coef.</i>	<i>Prob.</i>	<i>Coef.</i>	<i>Prob.</i>	<i>Coef.</i>	<i>Prob.</i>
Eqass	.0012	0.0001	..0019	0.0001	.0013	0.0001
	(2.27)		(2.37)		(2.26)	
R-Squared	0.9003					
R-Squared Adj.	0.8102					
Prob. F.	0.000					
R-Squared (within)			0.9204		0.9004	
R-Squared (between)			0.8149		0.8102	
R-Squared (overall)			0.8676		0.8553	
Wald Ch2					13.13	
Prob. Ch2					0.000	
Hausman Test			Chi2(2) = 0.74		Prob>Chi2= 0.8756	

Source: Computed by Researchers, via STATA 13.

In model 3, we found that accounting conservatism (earnings quality) is highly significant at 1% level in explaining firm structure (equity-to-asset). Output of OLS shows that equity-to-asset (*eqass*) has a larger beta coefficient in absolute terms using FE and RE. Using the OLS and RE, coefficient of firm structure is .0012 and .0019 respectively, indicating that when publicly listed manufacturing firms' employ accounting conservatism, it will lead to 1.9% change in their level of firm structure.

Furthermore, the beta coefficient for both FE and RE are significant at 5% levels. Impliedly, when publicly listed manufacturing firms' employ accounting conservatism, it will lead to approximately 1.3% change in their level of firm structure. The result of Hausman specification test is Chi2(2)=0.74 and p-value= 0.8756; this means that the fixed effect is more efficient than random effect. Since the Wald Ch²-statistics is 13.13 with a probability value of 0.000, it implies it is statistically significant, leading to the rejection of the null hypothesis and acceptance of the alternate hypothesis that there is a positive and significant relationship between accounting

conservatism (earnings quality) and firm structure (equity-to-asset) among listed manufacturing firms in Nigeria.

The study results support a-prior expectation and earns the support of prior findings of Alkurdi, *et al* (2017); Odia and Osazevbaru (2018); Santhosh and Yong (2018); Asiriuwa, *et al* (2019); Govcopp (2020); and Abbas, Yasin, Ramazan and Hamed (2020) who found that the level of accounting conservatism positively and significantly affects the firm structure. Thus, the level of accounting conservatism plays a fundamental role in enhancing under-levered firms' adjustment of asset structure of publicly listed manufacturing firms in Nigeria.

5. CONCLUSION AND RECOMMENDATIONS

In the accounting literature, quite a number of studies have assessed the relationship between accounting conservatism, capital structure, corporate governance with little focus on whether accounting conservatism affects the firm structure, particularly its asset structure for publicly listed manufacturing companies in Nigeria. Given the gap in the literature, the study examined the relationship between accounting conservatism and firm structure of listed manufacturing firms in Nigeria from 2012-2020.

Accounting conservatism was measured using earnings quality while firm structure by asset structure (i.e. equity-to-asset and asset tangibility). On the basis of the analysis, we find evidence that a firm with more conservative financial disclosure of its earnings accrual adjusts its asset structure towards the companies target more rapidly; this in particular is common for publicly listed manufacturing firms in Nigeria that rely on external financing for adjustment. Furthermore, we found that the level of accounting conservatism positively and significantly affects the firm structure and this effect arises due to debt issuance.

Overall, the level of accounting conservatism occupies a central place in enhancing under-levered firms' adjustment of asset structure of publicly listed manufacturing firms in Nigeria. The study recommends that the regulatory framework of accounting and companies should ensure that mechanism is put in place which is aimed at the strict application of accounting conservatism by

firms and firms erring should be compelled to face strict penalty. Finally, this study contributes to knowledge by establishing that accounting conservatism increases and affects the firm structure of publicly listed corporations on the floor of Nigerian Exchange Group (NEG).

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EFFECT OF FISCAL DEFICIT ON INFLATION AND SELECTED MACROECONOMIC FUNDAMENTALS OF NIGERIA: 1981-2020

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Abstract

This study examined the impact of fiscal policy on inflation in Nigeria, using Auto regressive distributed lag model (ARDL), for a period of 1981-2020. Secondary data were used in the study. The variables that were utilized include inflation rate (INF), as the dependent variable; and a set of independent variables; government deficit financing (GDF), interest rate (INT), exchange rate (EXR) and gross domestic product (GDP). Stationarity test was carried out using Augmented Dickey-Fuller Test (ADF). The result showed a mix of integration of order 1(0) and 1(1) which lends credence to the adoption of ARDL model. The cointegration test revealed the presence of long run relationship. As such, the result of the long-run ARDL cointegration revealed that GDF exert positive impact on INF. Specifically, a percent increase in government deficit (GDF) will lead to an increase of about 2.77 percent in the rate of inflation. The EXR, and INT also exert positive impact on INF in the long-run. Only GDP was found to exert negative impact on INF. In line with this finding, the study concluded that, fiscal deficit does not create inflation, but inflation causes the fiscal deficit, making it a one-way causation from inflation to the budget deficit. The study recommended that government should strike appropriate balance between recurrent expenditure and capital expenditure, that is, Fiscal deficit should not be geared towards recurrent expenditure to the detriment of capital expenditure which has the capacity to stimulate employment and reduce inflation.

Key words: Fiscal deficit, inflation, interest rate, exchange rate, economic growth

INTRODUCTION

Fiscal policy is the revenue and expenditure measures used by the government to facilitate economic development achieving macroeconomic objectives. It is critical for maintaining economic growth and achieving macroeconomic stability. The fiscal deficit is implied when government expenditure is more than government revenue. Fiscal deficit in advanced nations such as the United States offers motivation for a re-evaluation of the impact of fiscal deficits on economic activity (Islam & Wetzels, 1991). However, fiscal deficits have been blamed for most of the economic issues that have plagued less developed nations like Nigeria since the 1980s, such

as over indebtedness and debt crises; excessive inflation; poor investment performance and growth (Onwioduokit, 1999).

In Nigeria, the income surplus has not been sufficient to match development spending. Thus, Nigeria's fiscal strategy is still characterized by deficit budgeting. Obviously, foreign grants alone will not be sufficient to pay the deficit, foreign and domestic loans will be required. As a result, the total loan value has been increasing, and the debt service burden has been increasing year after year. Since the 1980s, the persistence of fiscal deficits in developing countries, which are mostly financed by government borrowing from the banking system, has been blamed for many of the economic crises that have plagued them, including debt overhang and subsequent debt crises, high inflation, poor investment performance, and slow growth (Onwioduokit, 1999).

Large deficits can sometimes have a negative impact on a country's economic growth. From 1970, deficits have accrued during periods of economic boom and bust in Nigeria, and the nation's fiscal structure has not remained static. Various schools of thought have voiced their views on how the budget deficit impacts the economy's performance. According to Keynesian theory, a budget deficit has a negative impact on macroeconomic variables such as interest rates, currency rates, and inflation. Excessive borrowing can also cause private investment to be crowded out, as well as inflation and currency rate volatility.

Despite the Nigerian government's efforts to devise policy measures targeted at reducing the budget deficit, the country's economy continues to suffer from it, with negative consequences on important macroeconomic indicators such as interest rates, currency rates, and inflation. It is clear that borrowing from foreign financial institutions and central banks to finance a significant amount

of deficits contributes to liquidity and inflation crises in most developing countries, such as Nigeria, Ghana, and India.

In Nigeria, inflation has become a threat to the economy, especially to workers, as their standard of living continues to deteriorate. Nigeria's inflationary trajectory is inextricably connected to the long-term rise in oil prices. As the price of petrol skyrocketed, so did the price of transportation, food, building materials, rentals, and other products and services. The progressive increase in the price of petrol to ₦97.00 per litre in 2012, ₦145 per litre in mid-2016, and now ₦165 per litre by the year 2021 added to the inflation. As a result, the cost of products and services has risen dramatically. Nonetheless, the period's transition to high inflation rates resulted in significant real cost and income losses, while the economy's overall performance deteriorated as a result of widening fiscal deficits and declining oil revenues, as well as the 2015 recession, which was exacerbated by poor macroeconomic management and political uncertainty.

The impact of fiscal deficits on macroeconomic aggregates is determined by the methods of financing (Inflation tax or bond financed deficit). Money creation to finance deficits frequently results in inflation, but domestic borrowing invariably results in a credit squeeze via increased interest rates or credit allocation (Easterly & Robello, 1994; Sowa, 1994). It is worth noting that Nigeria has depended heavily on inflation taxes (about 70%) and non-banking holdings of government bonds (15-20%). Others contend that fiscal deficits have a negative relationship with gross domestic output and thus negatively affect output growth (Diamond & Ogundare, 1982), while others argue that deficits have a positive relationship with gross domestic output and thus negatively affect output growth (Diamond & Ogundare 1982). (Egwaikhide, 1992; Soludo, 1998). Nigeria's economic development, fiscal framework, and political system all contributed to the country's economic growth. Previous related researches have focused on characterizing the

consequences of alternate sources of revenue and the composition of deficit expenditure rather than examining whether the fiscal imbalance causes inflation. Based on the aforementioned, the research sought to determine the impact of Nigeria's budget deficit on inflation and its influence on economic growth.

THEORETICAL FRAMEWORK

Three major schools of thoughts can be applied to the theoretical argument of fiscal deficit. The three schools of thought are Ricardian, Neoclassical, and Keynesian. Each of these schools of thought has opposing viewpoints on the budget deficit. Furthermore, the Keynesian perspective varies from the neoclassical paradigm on two key grounds. To begin with, it allows for the prospect of certain economic resources being idle. Second, it assumes the presence of a large number of myopic, liquid-constrained people.

In the most basic and naive Keynesian model, a one-dollar (\$1) increase in the budget deficit leads production to grow by the inverse of the marginal inclination to save. According to the classic IS-LM monetary economics study, this increase in production enhances the demand for money. Interest rates must rise and private investment must decline if the money supply is fixed (that is, the deficit is covered by bonds). As a result, output is reduced, partially offsetting the Keynesian multiplier effect.

Moving beyond Keynesian reasoning, Ricardo believed that fiscal deficits had a neutral influence on growth. The sole purpose of a budget deficit, according to Ricardian theory, is to postpone taxes. In every given time, the deficit is precisely equal to the present value of future taxation necessary to pay off the debt increase caused by the deficit. To put it another way, government

expenditure must be paid for now or later, and the present value of spending must match the present value of tax and non-tax receipts. In a Ricardian perspective, the idea of a fiscal deficit is meaningless.

The notion of deficit financing was shown to be crucial with the introduction of Keynesian economics. However, some prominent theories, such as the neo-classical theory, claim that a budget deficit is harmful to the economy. In-line with this, Nelson and Singh (1994) used cross section regression to examine the deficit-growth relationship for 70 developing countries in order to capture the relationship empirically. Nelson and Singh (1994) investigated the growing public-sector economic-decline hypothesis by framing the model around prominent ideas in the growth and development literature. They discovered that, although being negative, the deficit coefficient was small, implying that there was no link between growth rate and public investment. Other factors were significant and had a positive relationship with growth, although revenue and inflation showed a negative relationship; on this point, the study will be based on Keynesian theory.

However, Keynesian inflation theory maintained that demand-pull inflation is caused by an increase in aggregate demand. When the entire demand for goods and services exceeds the aggregate supply and provision of products and services in the economy, demand pull inflation occurs. Consumption, investment, and government spending all contribute to aggregate demand in this sense. Policies that reduce each component of total demand are successful in reducing demand pressure and, in turn, inflation. This entails cutting government spending, raising taxes, and limiting the amount of money in circulation (Totonchi, 2011). As such, Nigeria, whose economy can barely produce enough output to meet demand and is heavily reliant on foreign aid, may face higher inflationary pressures as a result of excess demand, and when taxes are raised,

producers may become more involved in rent-seeking economic activities rather than investing in the real economy, which can address the problem of low productivity and unemployment.

EMPIRICAL LITERATURE REVIEW

Khieu (2014) examined budget deficit, money growth and inflation in Vietnam. Using monthly data from January 1995 to December 2012 and an SVAR model with five endogenous variables, inflation, money growth, budget deficit growth, real GDP growth, and interest rate, the study experimentally investigates the relationship between budget deficit, money supply, and inflation. Because monthly data on real GDP and the budget deficit were unavailable, he interpolated those variables using Chow and Lin's (1971) annualized technique from yearly data. Overall, he finds that money growth has a positive impact on inflation, but budget deficit increase has no effect on money growth or inflation. Furthermore, the budget deficit is unaffected by shocks to other variables. The estimation findings also indicate that the State Bank of Vietnam tightened monetary policy by limiting money growth in reaction to positive inflation shocks, but the response was rather delayed, taking three months for the monetary authority to completely respond to such shocks. Finally, while interest rates were not an effective tool for combating inflation, inflation had a considerable and favourable impact on them.

Oyeleke and Adebisi (2014) using yearly time series data from 1980 to 2010, assessed if Ghana's budget deficit is sustainable using Ordinary Least Squares (OLS), Engle-Granger, and Error Correction Model techniques to see if the economy has met the condition for participation in the planned West African Monetary Zone (WAMZ). According to the study, government revenue and spending, as well as the budget deficit, have a long-run weak connection, indicating sustainability.

Furthermore, the analysis showed that only 29% of the imbalance between government revenue and spending produced in the economy was rectified annually following economic shocks, implying that the country may not be eligible for WAMZ membership.

Ndashau (2012) utilized Granger causality approaches reinforced by vector error correction model (VECM) to examine the existence of a causation impact from inflation to budget deficits scaled by the money base in Tanzania. The impact of budget deficits on inflation, on the other hand, was not statistically significant. Lin and Chu (2013), on the other hand, use a dynamic panel quantile regression (DPQR) model based on the autoregressive distributive lag (ARDL) regime to investigate the extent to which fiscal deficits are inflationary in 91 countries from 1960 to 2006. Fiscal deficits are only inflationary in high-inflation nations, according to the study's findings.

Greg and Okoiarikpo (2015) utilized the Chow endogenous break test, unit root, and co-integration tests to analyse the influence of fiscal deficits on macroeconomic performance in Nigeria from 1980 to 2013. The findings of the Chow test study show that the impact of budget deficit on growth differs between the two regimes. The analysis reveals that during the military regime, the budget deficit had a considerable growth impact, but during the democratic system, it had no meaningful influence on economic growth. The study's findings, on the other hand, show that the interest rate had no significant growth influence throughout both regimes, but gross fixed capital creation had a considerable growth impact during both regimes.

Also, Bakare, Adesanya, and Bolarinwa (2014) using yearly time-series data, experimentally analysed the long-term link between Nigeria's budget deficit, money supply, and inflation from 1975 to 2012. The variables in the model are stationary at levels, according to the Augmented Dickey-Fuller (ADF) stationary test. However, the study used the Johansen co-integration test to look for a long-term link between the variables, which revealed that there are at least three co-

integrating vectors. In addition, the Error Correction Model's predicted coefficient suggests that around 132 percent of short-run errors are fixed in the long run. As a consequence, the overall result between inflation rate and money supply growth, as well as the growth ratio of the budget deficit to GDP and the growth ratio of foreign debt to GDP, shows that the stated model is statistically significant at the 5% level.

RESEARCH GAP

Though, quite a number of studies have been conducted on the impact of fiscal deficit, inflation on economic growth both in Nigeria, African and the rest of the world. However, these study failed to reach any consensus at to the direction of causation. Incidentally, these studies are time deficient looking at the time lag. There is need for current study to be done, in view of the macroeconomic imbalances, particularly inflation and the chronic budget deficit currently prevailing in country's economy. This current trend in inflationary pressure as well as the high budget deficit has neutralized the potency of the existing thinking and hence, new study needs to be undertaking so as to ascertain the degree of impact and thus, bring forth new contributions.

MODEL SPECIFICATION

The model for this study is stated as

$$INF = f(GDF, EXR, INT, GDP)..... (1)$$

Where;

INF = inflation rate

GDF = Government deficit Financing

EXR= Exchange rate

INT = Interest Rate

GDP = Gross domestic product, proxy for economic growth

The static form of the model is given in equation 2:

$$\text{INF}_t = \beta_0 + \beta_1 \text{GDF}_t + \beta_2 \text{EXR}_t + \beta_3 \text{INT}_t + \beta_4 \text{GDP}_t \dots\dots\dots (2)$$

The stochastic form of the model is given in equation 3:

$$\text{INF}_t = \beta_0 + \beta_1 \text{GDF}_t + \beta_2 \text{EXR}_t + \beta_3 \text{INT}_t + \beta_4 \text{GDP}_t + U_t \dots\dots\dots (3)$$

The log of both sides of equation 3 is then calculated in accordance with the assumption of variable linearity. Many economic time series data display a strong trend, thus, taking the natural logarithm of a series efficiently linearizes the exponential trend. Logarithmic transformations of variables are particularly common in econometrics.

$$\ln \text{INF}_t = \beta_0 + \beta_1 \ln \text{GDF}_t + \beta_2 \ln \text{EXR}_t + \beta_3 \ln \text{INT}_t + \beta_4 \ln \text{GDP}_t + U_t \dots\dots\dots (4)$$

The stationarity of the used variables must be checked before moving on to the cointegration test. The ADF unit root test was used to determine the order of integration of the variables. Following the stationarity test, the long-run correlations between the variables were examined using Pesaran *et al.* (2001)'s Autoregressive Distributed Lag (ARDL) bounds testing technique to cointegration. This strategy is used because it performs better in small samples than other methods. It can also be utilized regardless of the sequence in which the regressors are integrated. According to Haug (2002), the ARDL bounds testing approach is more suitable and provides better results for small sample sizes and the short and long-run parameters are estimated simultaneously, and the procedure consists of estimating an unrestricted error correction model with the following generic form in which each variable comes in turn as a dependent variable. The unrestricted error correction model is used for equation 5.

The ARDL representation of the fiscal deficit and inflation relationship can be constructed as:

$$\Delta INF_t = \lambda_0 + \lambda_1 GDF_{t-1} + \lambda_2 EXR_{t-1} + \lambda_3 INT_{t-1} + \lambda_4 GDP_{t-1} + \lambda_5 \Delta GDF_t + \lambda_6 \Delta EXR_{t-i} + \lambda_7 \Delta INT_{t-i} + \lambda_8 \Delta GDP_{t-i} + \eta ECM_{t-1} + u_t \dots\dots\dots(5)$$

In the equation 5, Δ is the first-difference operator, and λ_s indicate long run coefficients and short run coefficients are represented as. The hypothesis of no cointegration deals with $H_0: \lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = \lambda_5 = \lambda_6 = \lambda_7 = \lambda_8 = 0$ and $H_1: \lambda_1 \neq \lambda_2 \neq \lambda_3 \neq \lambda_4 \neq \lambda_5 \neq \lambda_6 \neq \lambda_7 \neq \lambda_8 \neq 0$ is an alternative hypothesis of cointegration.

The short-run causality is thus determined from the following ARDL model;

$$\Delta INF_t = \psi_0 + \psi_1 \Delta GDF_{t-i} + \psi_2 \Delta EXR_{t-i} + \psi_3 \Delta INT_{t-i} + \psi_4 \Delta GDP_{t-i} + \eta ECM_{t-1} + u_t \dots\dots\dots(6)$$

where ECM is the error - correction term generated from the long-run cointegrating relation from the above described ARDL models, and Δ is the difference operator. As a result, in order for causation to exist in the long term, η should have a negative and significant sign.

DATA ANALYSIS AND PRESENTATION OF RESULTS

Table 1 presents the summary of the Augmented Dickey Fuller (ADF) test result for all the time series data. The result of the stationarity test carries out on inflation (INF), Government deficit financing (GDF), Exchange Rate (EXR), interest rate (INT), and Gross domestic product (GDP) showed a mixture of 1(0) and 1(1) stationarity.

Table 1: Unit Root Test

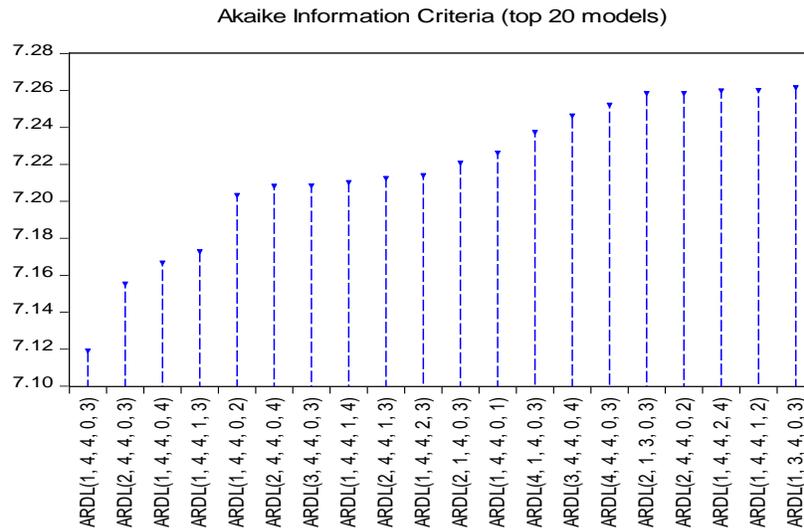
Variables	ADF Statistic	Critical Value (5%)	Order of Integration	Prob	Remark
INF	-5.56263	-2.95142	1(1)	0.0001	Stationary
GDF	-6.43891	-2.95142	1(1)	0.0000	Stationary
EXR	-4.34762	-2.95142	1(1)	0.0000	Stationary
INT	-6.72826	-2.92215	1(0)	0.0000	Stationary
GDP	-3.56401	-2.95142	1(1)	0.0000	Stationary

Source: Authors computation using Eviews 10, 2021

Moreover, further evidence of stationarity was also revealed from the result of p-value which is less than 5% for all the variables. It can be inferred from the result that unit root exists for most of the variables (INF, GDF, EXR and GDP) at their levels. Only INT was found to be stationary at level 1(0), while other variables become stationary only in the first difference 1(1). As such, the ARDL bound test and ARDL co-integration tests was used for detecting long run relationship between fiscal deficit and inflation.

Model Selection Criterion:

In this study, the model selection criterion is employed to establish the optimal lag time for the best outcomes. The model ARDL (1, 4, 4, 0, 3) was chosen as the best fit model using the Akaike information criteria. This signifies that the variables in this model will have the lags indicated in the model for producing the f-statistic limits test.



Source: Authors computation using Eviews 10, 2021

Figure 1: Lag Selection Criterion

Bounds Test for Cointegration:

The bounds test for cointegration is used to test for long run relationship between variables. There is cointegration in variables in a case where the calculated f-statistic is greater than the upper bounds critical value by Pesaran *et al.* (2001).

Table 2: Bounds Test

Dependent Variable: INF

		F-statistic= 6.348116 K= 4
Critical Values	Lower Bound 1(0)	Upper Bound 1(1)
10%	2.2	3.09
5%	2.56	3.49
2.5%	2.88	3.87
1%	3.29	4.37

Source: Authors computation using Eviews 10, 2021

It can be observed that the f-statistic of 6.348116 was both greater than the upper bound value of 3.49 with a degree of freedom, $K= 4$. This implies that, in this model, there exist long run relationships between the dependent and independent variables. Based on this, the long run and short run error correction models can be estimated.

Table 3: ARDL Long-Run Estimates

Dependent Variable: INF

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Log(GDP)	-11.25673	11.71959	-1.619348	0.1428
Log(INT)	1.579752	0.631710	2.436344	0.0235
Log(GDF)	2.774095	1.026230	2.747096	0.0113
Log(EXR)	0.286562	0.054477	2.502952	0.0121
C	162.1791	119.6463	1.258256	0.1641

Source: Authors computation using Eviews 10, 2021

The coefficient of Log (GDP) is -11.25673, implying that in the long term, there is a negative link between GDP and inflation. This suggests that a one-naira rise in GDP will result in an 11.26 percent drop in inflation. As a result, this may be readily explained by noting a circumstance in which greater output leads to a decrease in inflation rate due to increased availability of such commodities. This, however, has not been the case in Nigeria because, despite its gradually growing economy, it has little to show for its reduction in inflation due to sharp practices by government agencies and individuals, such as hoarding of produce and incessant importation, which stems from neglect of the real sector's major parts. This relationship however, is not statistically significant judging from its small t-statistic of -1.62 which is lower than the table value of 2.042, as well as the p-value of 0.14.

In the long term, interest rate (INT) has a positive relationship with inflation, as indicated by its coefficient of 1.579752, which means that a percentage rise in interest rate provides a positive change in inflation rate of around 1.58 percent. The significance of the p-value 0.0235, which is

below the 5% level of significance, further supports this. This relationship holds true in reality, as it is expected that in a country like Nigeria, where institutions and structures are underdeveloped in all spheres, a continuous rise in interest rates will lead to an increase in inflation due to the inaccessibility of funds by the larger part of the intending enterprising individuals. This, together with the expanding population, will certainly result in a shortfall of output, raising inflationary pressure in the long term.

The Government deficit financing (GDF) coefficient is 2.774095, implying a positive association with inflation. This means that a 1% rise in the government fiscal deficit will result in a 2.77 percent increase in the rate of inflation. This means that, in the long run, the revenue-to-expenditure disparity may expand to the point where inflationary pressures are exerted on the economy. When an economy has a large deficit, such as Nigeria's, the government of such a nation, which has a poor revenue base structure, is forced to borrow. Borrowing becomes onerous in this instance in the long term since the borrowed money are primarily spent on ineffective initiatives. Following the classical view of fiscal principles, repaying the loans will fall to the population in the long term, disturbing the private sector equilibrium and, as a result, limiting investment capital, which leads to inflation due to lower production. The importance of the coefficient, as evidenced by the significance of its p-value of 0.0113, further supports this association.

The exchange rate coefficient (EXR) is 0.286562, implying a long-term positive association between exchange rate and inflation rate. Inflation will rise by 0.29 percent for every unit increase in the exchange rate. This is supported by current events in Nigeria, where the naira continues to lose value in respect to the dollar, causing the naira exchange rate to rise, making exports cheaper and imports more expensive. Nigeria being a net importer of both capital and consumer products,

affecting the price of imported items and, as a result, the overall price level. The significance of the coefficient, which has a p-value of 0.0121, further supports the applicability of this connection to Nigeria's present morass.

Table 4: ARDL Short-Run Estimates

Dependent Variable: DINF

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LogGDP)	116.8331	39.51064	3.106613	0.0026
D(LogGDP(-2))	-102.1102	41.25904	-2.551107	0.0120
D(LogGDP(-3))	93.512285	31.52164	2.567153	0.0101
D(INT)	-1.347728	0.137785	-8.111003	0.0000
D(INT(-3))	-0.211524	0.088405	-3.676449	0.0012
D(EXR)	0.115685	0.070104	2.910178	0.0161
D(EXR(-2))	0.331957	0.092175	3.230614	0.0013
Ecm(-1)	-0.894102	0.160231	-6.294371	0.0000
$R^2 = 0.883251$, Adj. $R^2 = 0.822190$, Durbin-Watson stat = 1.690912				

Source: Authors computation using Eviews 10, 2021

Table 4 shows that current period GDP has a positively signed coefficient, indicating that current period GDP and inflation have a positive association. Given the coefficient of 116.8331, a billion naira rise in GDP will result in an increase in inflation of 116.8%. This is exemplified by the Nigerian situation, in which there is a type of inflationary expansion in which the rise in output is not matched by the economy's capacity. However, because it has a negative coefficient, this trend changes at the two-period lag of GDP. This might imply that after a year of experiencing inflationary growth, government initiatives would be implemented to rectify the system, resulting

in higher production and reduced inflation. However, once the connection turns positive again in the third lag of GDP, the control mechanisms become ineffective.

Furthermore, both the current period interest rates and the interest rates from the previous three years had negative coefficients of -1.347728 and -0.211524, implying that they both had negative relationships with inflation in the short run, with a percent increase in the current year's interest rate resulting in a 1.35 percent reduction in inflation, and a percent increase in the previous three year's interest rate resulting in a 0.21 percent reduction in inflation. The magnitude of the coefficients indicates that interest rates lose part of their impact on inflationary rate over time. Thus, if the government decides to impose a different interest rate for a sector that it believes is causing excessive inflationary pressure on the economy, higher interest rates may lead to lower inflation rates.

In the short term, the exchange rate has positive associations with inflation in the present period and at two lags. From the model parameters, a naira rise in the current period's exchange rate and the previous two years' exchange rate will result in 0.12 and 0.33 percent increases in inflation, respectively. This is definitely the situation in Nigeria, where the exchange rate rises along with inflation.

The error correction term ECM (-1) has a desirable negative coefficient and is statistically significant. It is a measure of the pace of adjustment towards long run equilibrium. The coefficient of determination of -0.894102 indicates that in the event of a system disturbance, the system adjusts at a rate of 89.4 percent. Meanwhile, the coefficient of determination suggests that the variables in the model explained around 89 percent of variations in inflation in the short run.

Table 5: Diagnostic Tests

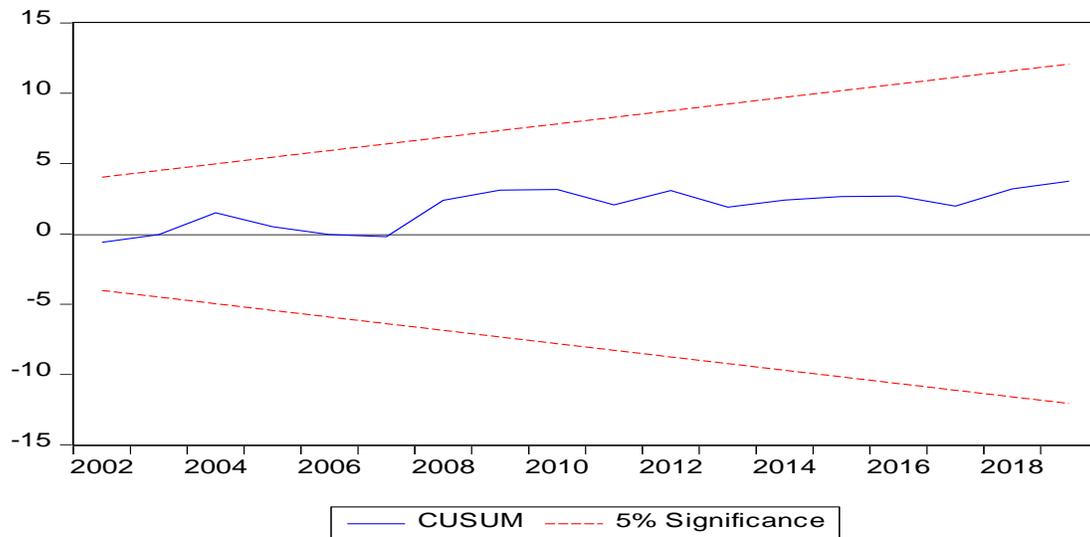
Test Statistics	P-value
Serial Correlation: F-statistic(2, 16)	0.2300
Heteroskedasticity: F-statistic(16, 18)	0.2613
Normality: Jarque-Bera	0.561067
Specification Error: F-statistic(1, 7)	0.0623

Source: Authors computation using Eviews 10, 2021

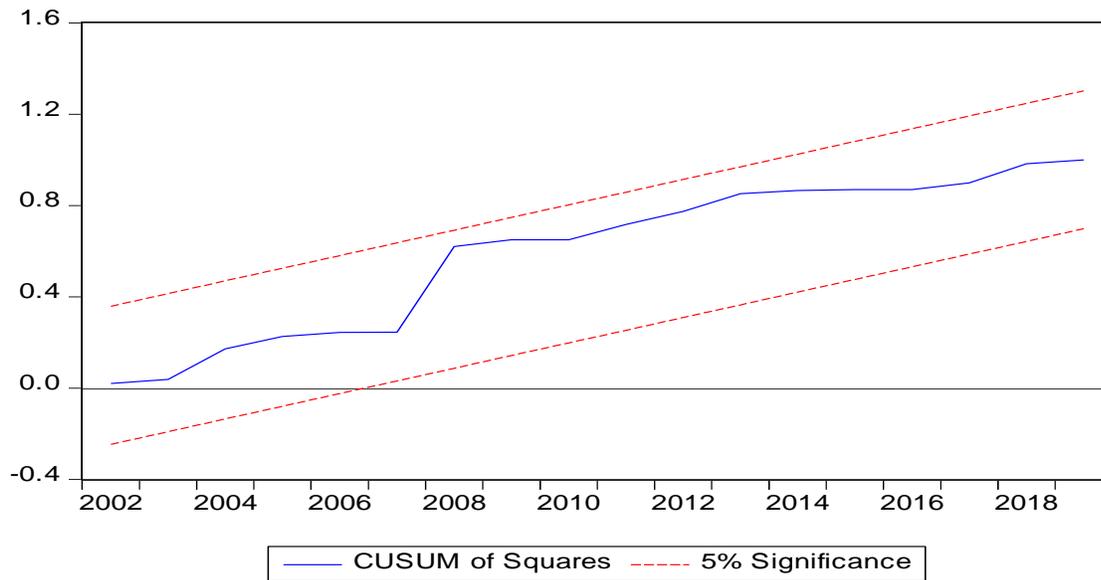
The probability value of the serial correlation test using the Breusch-Godfrey Serial Correlation LM Test is 0.2300, indicating that the null hypothesis that there is no serial correlation in the residuals is accepted at the 5% level of significance. The Breusch-Pagan-Godfrey heteroskedasticity test has a probability value of 0.2613, implying that the null hypothesis of no heteroskedasticity is accepted at the 5% level of significance. The Jarque-Bera normality test has a probability value of 0.561067, indicating that the null hypothesis that the residuals follow a normal distribution pattern is accepted, whereas the misspecification test using the Ramsey RESET test has a probability value of 0.0623, indicating that the model is free of any misspecification errors.

Stability Test:

The graphs in figures 2 and 3 showed the result of stability test conducted using the CUSUM and CUSUM sum square tests.



Source: Authors computation using Eviews 10, 2021

Figure 2: CUSUM Test for Stability

Source: Authors computation using Eviews 10, 2021

Figure 3: CUSUM Sum of Square Test for Stability

Since the trend lines in figures 2 and 3 do not exceed the upper and lower 5 percent boundaries, then it is concluded that the system is stable over time. By these, it is evident that the model is free from all-time series problems, the obtained estimates can be relied upon for decision making.

CONCLUSION AND RECOMMENDATIONS

The fiscal deficit does not create inflation, but inflation causes the fiscal deficit, making it a one-way causation from inflation to the budget deficit. Meanwhile, GDP and inflation, as well as the fiscal deficit and GDP, are independent of one another. As a result, GDP and inflation have a long-term positive relationship, with an increase in GDP leading to an increase in inflation via non-economic spending by individuals and the government, while an increase in inflation also increases GDP through increased productivity and output, resulting in a circular flow. Meanwhile, the fiscal deficit (GDF) reduces GDP in the long run and has no impact on inflation determination, as seen by its absence in short-run estimates.

The study also found that the positive GDP feedback takes up to three years to kick in, but the impact of the fiscal deficit on GDP is instantaneous. Meanwhile, inflation has an immediate negative impact on GDP, but after a one-year lag, it is adjusted and has a positive influence.

Inflation from the previous year has a favourable impact on current inflation rates, demonstrating a ratchet effect in which once prices increase, they continue to climb. While current GDP and GDP from the previous year have an inverse relationship with inflation, GDP from the previous two and three years has a positive impact on inflation rates. As a result, the researchers advised that the government should always seek to strike a proportionate balance between recurrent and capital spending, i.e., the fiscal deficit should not be directed toward recurrent spending at the expense of capital spending, which has the potential to promote employment.

For successful control of Nigeria's inflation rate, the government should reduce budget deficits and finance them through public borrowing. This is because increasing fiscal deficits expands the money supply, which has a long-term negative impact on economic growth. The government should prioritize its projects rights, be more dedicated to budget implementation, and pay more attention to growth-oriented capital investment. This may be accomplished through careful preparation and the availability of data.

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ANALYSIS OF TAX INCOME ON REVENUE GENERATION IN NIGERIA

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Abstract

This study investigated the effect of tax revenue on revenue generation in Nigeria for the period of 1985-2015, with the purpose of finding effect of the various tax revenue represented by Petroleum Profit Tax, Company Income Tax and Customs and Excise Duties taxes had impacted on revenue generation in Nigeria for the period of the study. The data which are secondary in nature were analysed using Simple Regression Analysis for the three research questions and three hypotheses in the study. The findings reveal that, Petroleum income tax have significant relationship on revenue generation in Nigeria, while company income tax and customs and excise duties does not have significant relationship on revenue generation in Nigeria. The study therefore recommends amongst others that, government should enhance policy measures that will help to improve on marketing of petroleum income tax so as to sustain and improve on the successes recorded in the collection. Measures should also be taken to ensure that proper assessment is carried out on tax administration in companies so as to ascertain the actual tax that ought to be payable by companies in the country and also government should try to improve on management of customs and excise duties so as to allow importers and exporters go through proper process of importation and exportation in the country.

Keywords: *Petroleum income tax, Company income tax, customs and excise duty tax.*

Introduction

One major means or generating the revenue for providing the needed infrastructure is through a well-structured tax-system (Ogbonna & Appah, 2012). Aguolu (2004) stated that taxation is the most important source of revenue to the government; owing to the inherent power of the government to impose tax, the government is assured at all times of its tax revenue no matter the circumstances. Azubike (2009) agreed to the above fact when he stated that tax is a major player

in every society of the world. The tax system is an opportunity for government to collect additional revenue needed in discharging its pressing obligation. Appah (2004) defines tax as a compulsory levy imposed on a subject or his property by the government to provide security, social amenities and create conditions for the economic well-being of the society. In the same view, Nightingale (2001) described tax as a compulsory contribution imposed by government and concluded that while tax payers may receive nothing identifiable in return for their contribution, they nevertheless, have the benefit of living in a relatively educated, healthy and safe society. She further explains that tax is part of the price to be paid for an organized society and identified six reasons for tax; provision of public goods, redistribution of income and wealth, promotion of social and economic welfare, economic stability, harmonization and regulation. Olotu (2012) cited monthly revenue increase from N275 million per month to over N1.6 billion per month, as is the case in Edo State. She attributed the cause mainly due to increase in tax revenue. Syndelle (2009) observed that in 2007, Lagos state achieved a gross domestic product of N3.68 trillion an equivalent of \$29.028 billion making it the biggest contributor to the federal government. Olotu (2012) mentioned that these states have seen their tax revenues tripled and quadrupled in recent times and this has enabled the implementation of numerous life and community transforming projects and programmes leading to an increasingly more satisfied populace.

The economic history of both developed and developing countries reveal that tax is an important tool in the hand of the government to generate revenue. Mobilization of tax revenue as a source of revenue generation in less developed economies such as Nigeria has been a difficult task primarily because of various forms of resistance, such as tax evasion, tax avoidance, poor and corrupt practices attending to it. These activities are considered as sabotaging the economy and are readily presented as reasons for the low income generation from tax which ultimately results in under development of an economy (Adegbe & Fakile, 2011). To address the issue of tax management, the study will comparatively analyse the relationship of various tax income to revenue generation in Nigeria.

Objectives of the Study

The objective of this study is to comparatively analyse the effect of tax income on revenue generation in Nigeria for the period 1985 - 2015. Specifically, the objectives are as follows:

- 1) To investigate the relationship between petroleum income tax and revenue generation in Nigeria
- 2) To investigate the relationship between company income tax and revenue generation in Nigeria
- 3) To investigate the relationship between customs and excise duties and revenue generation in Nigeria

Research Questions

The following questions will guide the study:

- 1) Does petroleum income tax affect revenue generation in Nigeria?
- 2) Does company income tax affect revenue generation in Nigeria?
- 3) Does customs and excise duty affect revenue generation in Nigeria?

Research Hypotheses

The hypotheses guiding the study will be stated in its null form:

- 1) Petroleum income tax does not have significant relationship with revenue generation in Nigeria.
- 2) Company income tax does not have significant relationship with revenue generation in Nigeria.
- 3) Customs and excise duties do not have significant relationship with revenue generation in Nigeria.

Review of Related Literature

The Institute of Chartered Accountants of Nigeria (2006) and the Chartered Institute of Taxation of Nigeria (2002) defined tax as an enforced contribution of money to government pursuant to a defined authorized legislation. Tax yields very substantial revenue to the government. A government's decision of what proportions and on whom to levy tax is referred to as tax policy. Tax policies are introduced with the primary goals of raising revenue to finance government spending, resource utilization and reducing inequality resulting from wealth distribution among customers. Furthermore, Romer and Romer (2010) reported that tax policies are introduced to fund a government to carry out its basic duties, such as providing public goods, preserving law and order, defending against foreign threats and controlling trade and industry to ensure social and economic support. The tax has microeconomic implications (income distribution and resource efficiency) and also macroeconomic effects (capacity, production, jobs, prices and growth) (Musgrave and Musgrave, 2004)

Taxation is a tool used by government to take interest in the incomes of individuals in return for goods and services provided by government to the people. Tax revenue is classified as income received by the government by taxation. Tax income is the money that the government has levied on its people as a way of fulfilling its duties and commitments for its citizens. (Sanni, 2007). In that regard, tax could have a positive or negative effect on both the individual and on the government. To the individuals, low income tax rate constitutes an incentive to work or save, while high income tax rate represents a disincentive to work or save. To the government, high tax rates provides the most reliable, important and dominant source of government revenue for promoting the economic development of the nation. The tax rate is often a major consideration in the choice of organizational form of business (Okafor, 2008); and may also be associated with varying levels of foreign direct investment. Apere (1999) in his view, asserted that taxation is the art or process of being taxed. It can also be defined as the transfer of resources from the private sector to the public sector in order to accomplish some economic development and social goals. Anyanwu (1993) pointed out that, there are three basic objectives of taxation. These are to raise revenue for the government, to regulate the economy and economic activities and to control income and employment. Also, Nzotta (2007) noted that taxes generally have allocation, distribution and

stabilization function. The allocation function of taxes entails the determination of the pattern of production, the goods that should be produced, who produces them, the relationship between the private and the public sector and the point of social balance between the two sectors. The distribution function of taxes relates to the manner in which the effective demand over economic goods is divided, among individuals in the society.

Musgrave and Musgrave (2006) posit that the distribution function deals with the distribution of income and wealth to ensure conformity with what society considers fair or just state of distribution. The stabilization function of taxes seeks to attain high level of employment, a reasonable level of price stability, an appropriate rate of economic growth, with allowances for effects on trade and on the balance of payment. Nwezeaku (2005) argues that the scope of these functions depends, inter alia, on the political and economic orientation of the people, their needs and aspirations as well as their willingness to pay tax. Thus, the extents to which a government can perform its functions depend largely on the ability to design tax plans and administration as well as the willingness and patriotism of the governed.

There are various taxes that are federally collected, these include: Company Income Tax (CIT), Petroleum Profit Tax (PPT), Personal Income Tax (PIT), Value Added Tax (VAT), Custom and Excise Duties (CED) amongst others;

Company Income Tax (CIT): Company Income Tax is regulated by Companies Income Act 2004 and 2020 as amended. All income accruing to a company chargeable to CITA is taxed on preceding year basis not on actual year basis. Therefore, companies income tax is a tax imposed on the profit of companies (excluding profit from companies engaged in petroleum operations) accruing in, derived from, brought into or received in Nigeria in respect of any trade or business, rent, premium, dividends, interest, royalties and any other source of annual profit. The tax is charged at the rate of 30%.

Petroleum Profit Tax (PPT): Petroleum profit tax involves the charging of tax on the income accruing from petroleum operations. It is a tax applicable to upstream operations in the oil industry (Odusola, 2006). The importance of petroleum to the Nigeria economy gave rise to the enactment of the different law regulating the taxation of incomes from petroleum operations. This means that companies engaging petroleum operations will not be subjected to tax under the CITA, but rather

on the Petroleum Profit Tax Act. For this reason, the Petroleum Profits Tax Act, cap. P13 LFN 2004 imposes tax on the profit of companies engaged in petroleum operations. A petroleum operation is defined as the mining or obtaining and transportation of petroleum or chargeable oil in Nigeria by or on behalf of a company for its accounts by any drilling, mining, extracting or other like operations or process of a business earned on by the company incidental thereto and any sale of or any disposal of, chargeable oil or on behalf of the company. Petroleum profit tax is charged at 85% profit.

Personal Income Tax (PIT): This is a type of tax charged on the income of individual. The chargeable income of an individual is the aggregate amount from all sources (whether from employment, investment, profit from trade, profession or vocation etc) after deducting all non-taxable incomes and relief granted.

Value Added Tax (VAT): Value added tax is a tax on consumption which is collected at each point of sale of goods and services from production to consumption but eventually borne by the final consumer. Each person is required to charge and collect VAT at a flat rate of 5% and presently 7.5% on all invoiced amounts. VAT was introduced by the Federal government of Nigeria in January 1993 (Ochei, 2010). Analyst says that the tax was intended to be a super tax to eradicate completely many other taxes related to goods and services especially sales tax. Under the Value Added Tax Act 1993 but main tax rate in Nigeria is 7.5% (raised on 1st February, 2020) as amended, every person whether resident in Nigeria or non-resident in Nigeria who sells goods or render services in Nigeria under the VAT Act is obliged to register for VAT within six months of its commencement of business in Nigeria. Registration is done with the Federal Inland Revenue Service (FIRS).

Custom and Excise Duty (CED): Customs Duty is a tax imposed on imports and exports of goods, while excise or excise tax is any duty on manufactured goods which is levied at the moment of manufacture, rather than at sale. Excises are often associated with customs duties (which are levied on pre-existing goods when they cross a designated border in a specific direction); customs are levied on goods which come into existence - as taxable items - at the border, while excise is levied on goods which came into existence inland.

Theoretical Review:

The Expediency Theory

This theory on its part is based on the assumption that, there need not be any relationship between tax paid and benefit received from the government. The proponents assert that every tax proposal must pass the test of practicability. It must be the only consideration of weighing the authorities in choosing a tax proposal.

This proposition has a truth in it, since it is useless to have a tax which cannot be levied and collected efficiently. The expediency theory is related to the tax structure development theory advanced by Hinrichs in 1966 which presupposes that improvements in tax structure have the propensity to increase government revenue and improve the economy of a nation.

The Agency Theory : Ingram (2009): In an agency relationship, one party called the agent makes decisions and acts on behalf of another, called the principal. The agency theory attempts to summarize and solve problems arising from the relationship between a principal and an agent. Agency relationships are common in financial management, due to the future of the industry. When one person manages another person's financial affairs. Specific agency relationship is the one that exist between the corporate executives and the company shareholders. Financial planners and mutual fund managers act as agents on behalf of individual clients and fund participants. Agents are required to work towards meeting his principal's goals, which is the primary function of that relationship. The principal should be aware of their agents decisions and actions and the agents are always clear and guided by their principal's priorities

Empirical Reviews:

Abiola and Asiweh (2012) also highlighted the contribution of Lagos State to government revenue generation in Nigeria. They stated that Lagos State is among a few states in Nigeria that have left a land mark in terms of independence and use internally generated revenue. Folayan and Adeniyi (2018) studied tax evasion on revenue generation, a case study of Nigeria using both qualitative and quantitative data, where the quantitative data were sourced from the internally generated revenue of Oyo State in Nigeria. The study found out that, tax evasion revealed an adverse relationship on revenue generation.

Lee and Gordon (2004) in their paper, Tax structure and economic growth, explore how tax policies affect a country's growth rate, using cross-country data during 1970-1997. Their findings revealed that statutory corporate tax rates are significantly negatively correlated with cross-sectional differences in average economic growth rates, controlling for various other determinants of economic growth, and other standard tax variables. Olotu (2012) (Tell Magazine, April 30, 2012). She pointed examples of Governor Okorochoa (Imo State), former Governor Oshiomole (Edo State), former Governor Fashola (Lagos State) and former Governor Amaechi (Rivers State) were among the list of states where tax revenues are being harnessed to transform their various jurisdiction. Adegbe and Fakile (2011) concentrated on the Company Income Tax and Nigeria Economic Development relationship. Using Chi-square and Multiple Linear Regression analysis in analysing the data, they concluded that there is a significant relationship between company income tax and Nigerian economic development and that tax evasion and avoidance are major hindrances to revenue generation. Animasaun (2017) investigated the connection between tax administration and Ogun State revenue generation in Nigeria. The study employed descriptive and inferential statistics and found that, there is no connection between tax administration and Ogun State revenue generation during the period of the study.

Ogbonna and Ebimobowei (2012) on their part, examined the Impact of Tax Reforms on Economic Growth of Nigeria using relevant descriptive statistics and econometric analysis and concluded that the various test shows that tax reforms is positively and significantly related to economic growth and that tax reforms generally cause economic growth. Ogbonna and Ebimobowei (2012) in their work disaggregated tax revenue into its various components such as; excise duties, personal income tax, petroleum profit tax, companies' income tax, value added tax and education tax and concluded that the included tax revenue variable have positive relationship with economy. To address the issue of tax management, the study will analyse the relationship of various tax income to revenue generation in Nigeria. Owolabi and Okwu (2011) also examined the contribution of Value Added Tax to Development of Lagos State Economy, using simple regression models as abstractions of the respective sectors considered in the study. The study considered a vector of development indicators as dependent variables and regressed each on VAT revenue proceeds to Lagos State for the study period. Development aspects considered included infrastructural

development, environmental management, education sector development, youth and social development, agricultural sector development, health sector development and transportation sector development. The results showed that VAT revenue contributed positively to the development of the respective sectors. On the aggregate, the analysis showed that VAT revenue had a considerable contribution to development of the economy during the study period. The study of Soetan (2017) examined the connection between tax administration and its revenue generation in Nigeria. The study used quantitative survey while descriptive and regression methods were used. It was found that in the study that tax administration revealed on significant impact on revenue generation during the study period. From the above premise, the researcher found a gap to carry out a research on the topic, “Analysis of Tax Income on Revenue Generation in Nigeria”

Methodology

The expost facto research design was adopted in conduct of the study. A sample of three major tax income which include: petroleum income tax, company income tax and customs and excise duty, while the federally collected revenue was adopted as the government revenue. Data used in the study were collected from various editions of the CBN statistical bulletin and FIRS publications relating to tax revenue collection for the period of the study as shown in the appendix. Regression Analysis was used to analyse the data collected for the purpose of the study. A model was formulated for the study as specified below: $y = a + b_1x_1 + b_2x_2 + \dots + b_nx_n + e_i$

Where : y is the dependent variable, $x_1, x_2 \dots x_n$ is the set of independent variables, a is the constant term, $b_1, b_2, \dots b_n$ is the coefficients of the independent variables and e_i is the error term.

For the purpose of this study, we posit that the proceeds of the various taxes collected by the federal government will lead to increased revenue generation. To this end, we propose that:

Revenue Generation = f (Total Government Income) (ii)

Where Revenue Generated is measured by Total Government Income (TGI) and Tax Revenue is measured by Petroleum Income Tax (PIT), Company Income Tax (CIT), Custom and Excise Duties (CED). It follows that: $TGI = f (PIT, CIT, \text{ and } CED)$ (iv)

Where: TGI is Total Government Income; PIT is Petroleum Income Tax,
 CIT is Company Income Tax, and CED is Customs and Excise Duties.

Thus, $TGI = a + b_1PIT + b_2CIT + b_3 CED + e_i \dots\dots (vi)$

We expect to find that: $b_1, b_2, b_3 > 0$

Results and Interpretation :

The tables below shows that result of the study.

Table 1: showing Model Summary

Model	R	R Square	Adjusted R square	Std. Error of the Estimate	R Square Change	Change statistics				
						F change	df 1	df2	Sig. F Change	Durbin Watson
1	.744 ^a	.554	.504	1.10227E7	.554	11.176	3	27	.000	1.476

- a. Predictor: (Constant, Custom & Excise Duties (CED), Corporate Income Tax (CIT) Petroleum Income Tax (PIT)
- b. Deponent Variable: Federally Revenue

Table 2: Showing ANOVA^a

Model	Sum of Squares	D	Mean Square	F	Sign.
1 Regression	4.074E15	3	1.358E15	11.176	.000 ^a
Residual	3.281E15	27	1.215E14		
Total	7.354E15	30			

- a. Predictors: (Constant, Custom & Excise Duties (CED), Corporate Income Tax (CIT) Petroleum Income Tax (PIT)

b. Deponent Variable: Federally Collected Revenue

Table 3: showing Coefficients^a

Model	Unstandardized Coefficient		Standardized Coefficients	T	Sig.	Correlations		Collinearity Statistics		
	B	Std. Error				Beta	Zero order	Partial	Part	Tolerance
(Constant)	55764.466	2.651E6	-.113	.021	.983					
Petroleum Income Tax(PIT)	-1.732	3.414	.346	-.507	.616	.548	-.097	-.065	.332	3.010
Corporate Income Tax (CIT)	8.627	4.045	.577	2.133	.042	.627	.380	.274	.629	1.589
Custom & Excise Duties (CED)	18.305	7.322		2.500	.019	.692	.434	.321	.310	3.228

a Dependent Variable: Federally Revenue

Table 4: Coefficient Correlations ^a

Model	Custom & Excise Duties (CED)	Corporate Income Tax (CIT)	Petroleum Income Tax (PIT)
1. Correlations: Custom & Excise Duties (CED)	1.000	-299	-721
Corporate Income Tax (CIT)	-299	1.000	-153
Petroleum income Tax (PIT)	-721	-153	1.000
Covariances: Custom & Excise Duties (CED)	53.605	-8.846	-18.008
Corporate Income Tax (CIT)	-8.846	16.361	-2.108
Petroleum Income Tax (PIT)	-18.008	-2.108	11.653

a Dependent Variable : Federally Collected Revenue

Result above as indicated on tax revenue relationship with federal income in Nigeria as shown in table 4 above indicated that petroleum income tax has high negative relationship value of -.721 with the federal government income. Also looking at the significance of PIT tax as shown on table 3 indicated a value of .616 which is above traditional significance value of 0.05 indicated that the negative relationship is significant to revenue generation in Nigeria. To this end the, the null hypothesis is rejected while the alternate hypothesis is accepted to the effect that, petroleum income tax has significant relationship with revenue generation in Nigeria.

The result on relationship between company income tax and federal government income also shows a value of -.299 which indicates a low negative relationship between company income tax and government income. The result on the significance of CIT tax as shown on table 3 indicated a value of .045 which is lower than the traditional significance value of 0.05 indicated that the negative relationship is not to revenue generation in Nigeria. To this end the, the null hypothesis

is accepted to the effect that, company income tax does not have significant relationship with revenue generation in Nigeria.

On customers and excise duties, it was discovered that there is a perfect relationship as indicated by a value of 1 with federal government income in Nigeria. Also looking at the significance of CED as shown on table 3 indicated a value of .019 which is less than the traditional significance value of 0.05 indicated that the positive relationship is significant to revenue generation in Nigeria. To this end the, the null hypothesis is accepted to the effect that, customs and excise duties do not have significant relationship with revenue generation in Nigeria.

Finally, from the summary of the results of all the tax instruments on revenue generation in Nigeria with a r-value of .744 indicating high positive relationship value and the r² value of .554 indicating that tax income has 55.4% impact on revenue generation (Table 1). Considering significance value on table 2 indicating a significance of 0.00 lower than the traditional significance value of 0.05, it can thus be concluded that tax income is not significant on revenue generation in Nigeria.

Discussion of Findings

From the findings of the study, it can be observed that, it is only petroleum income tax that is significant on revenue generation in Nigeria, while the company income tax and customs and excise duties is not significant on revenue generation. The analysis of all these tax instruments also shows that tax income is not significant on revenue generation which means revenue from tax, is minimal compared to other source of government revenue. This is in line with the findings of Lee and Gordon (2004) that revealed that, 'statutory corporate tax rates are significantly negatively correlated with cross-sectional differences in average economic growth rates, controlling for various other determinants of economic growth and also in line with the findings of Ogbonna and Ebimobowei (2012) and found out that, in their work after disaggregating tax revenue into its various components such as; excise duties, personal income tax, petroleum profit tax, companies' income tax, value added tax and education tax and concluded that the included tax revenue variable have positive relationship with economy.

Conclusion

Based on the findings of the study, the researcher concluded that:

Petroleum income tax have significant relationship on revenue generation in Nigeria. Company income tax and Custom and Excise Duties does not have significant relationship on revenue generation in Nigeria.

Recommendations In the light of the study conclusions, the researchers recommends amongst others that:

1. Government should enhance policy measures that will help to improve on marketing of petroleum income tax so as to sustain and improve on the success recorded in the collection.
2. Measures should also be taken to ensure that proper assessment is carried out on tax administration in companies so as to ascertain the actual tax that ought to be payable by companies in the country.
3. Government should try to improve on administration of customs and excise duties so as to allow importers and exporters go through proper and approved processes of importation and exportation in the country so as to improve custom and excise duty revenue, block leakages as a result of loopholes in collection and remittances from the authorities as this is capable of limiting the economic growth.

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APPENDIX

YEAR	Federally Collected Revenue N' Million	Petroleum Income Tax (PIT) N' million	Corporate Income Tax (CIT) N' Million	Custom & Excise Duties (CED) N' million
1985	15050.4	6711	1004	2183.5
1986	12595.8	4811	1103	1728.2
1987	23580.6	12504	1235	3540.8
1988	27596.7	6815	1551	5672.0
1989	53870.4	10598	1914	5815.5
1990	98102.4	26909	2997	8640.9
1991	100991	38616	3828	11456.9
1992	190453	51477	5417	16054.8
1993	192769	59208	9554	15486.4
1994	201910	42803	12275	18294.6
1995	459987	42858	21878	37364
1996	523597	76667	22000	55000
1997	582811	68574	26000	63000
1998	463668	68000	333000	57700
1999	949187	164300	46200	87900
2000	989187	525100	51100	101500
2001	1906159	639200	68700	170600
2002	2321600	39320	89100	181400
2003	1731837	683500	114800	195500
2004	2575095	1183600	113000	217200
2005	392205	1904900	140300	232800
2006	5965101	3038300	244900	177700
2007	5715500	1600600	275300	241400

ANALYSIS OF TAX INCOME ON REVENUE GENERATION IN NIGERIA...

2008	786690	1809612	290666	1133701
2009	48445925	1924016	295717	1132923
2010	73036671	1999008	2028700	1147268
2011	11116900	2011988	297516	1160029
2012	10657724	2113614	298460	1186250
2013	16602015	2120018	299010	1190024
2014	18721586	2456010	299900	1200100
2015	19715235	2785301	3012641	1284122

REVIEWING TAX COLLECTION IN THE ELECTRONIC TAX REGIME IN NIGERIA

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ABSTRACT

It is evident that the objective of tax is to raise realistic amount of money from the various tax payers by the government of a country in order to provide for the basic needs of its citizens at all times. Governments including Nigeria, device options with a view to continually improving tax collection. For this study, the option in question is the adoption and implementation of electronic system in tax collection in Nigeria with a view to improving tax collection. The focus of this study is therefore to assess whether the introduction of electronic tax system in Nigeria will produce high tax collection when it is compared with the manual system results. Paired t-test data analysis technique was used since it involved the comparison of pre and post electronic tax collections to determine for any significant difference. Following the expectation from the advent of electronic tax system, the actual secondary data extracted revealed a reduction in tax collection within the period of study. The result of non-oil tax revenues reveals a significant difference between pre and post e-tax. On the other hand, the result in respect of oil tax shows that there was a difference but it is not significant. Based on these findings, the study recommends that the FIRS should revisit this new system for i) reorientation and sensitization on regular basis until the tax payers are satisfied with new method; ii) implementation to be in phases following the responses from the tax payers directly or through consultants; and iii) FIRS must be ready and willing to listen and address relevant inputs and responses from the tax payers if the objectives of new system must be achieved.

Keywords: *Electronic tax system, FIRS, Nigeria, tax collection*

INTRODUCTION

Tax is a mandatory, but proportional financial contribution imposed by the governments on individuals, companies and other organizations' taxable incomes, profits, goods, services and other sources of income as may be deemed necessary by the governments for the purpose of providing the basics needs of their citizens taking into consideration the principles of taxation. It is evident that the objective of tax is to raise realistic budgeted amount of money from the various tax payers by the government of a country in order to provide for the basic needs of its citizens at all times. Base on this basic and constitutional demand by the citizens of a country like Nigeria, it becomes absolutely necessary to device options with a view to continually improving tax collection on that

option. For this study, the option in question is the adoption and implementation of electronic system in tax collection in Nigeria, and to compare the tax collection with the manual system over a time period.

Electronic tax collection is an aspect of digitization. Etim, Mfon and Patrick (2020) opined that digitization is for the transformation of national live and economy but it will come with public policy challenges and it doubtlessly has changed the nature of policy making as a result of the support of electronic tools and paraphernalia such as smart computer and accessories and other digital devices that pervades the economy in recent times that they have caused disruption away from the manual systems known before these present days. Raphael *et al.* (2020) stated that the matter of digitization noting electronic process has become heavily relied on and widely accepted as a result of its online ubiquitous presence globally. The compatibility of digitization of taxation for improved collection also afforded a reliable database of taxpayers which hitherto was a challenge though the extent of advantage of this database to the tax collecting agency may be difficult to ascertain.

Before commencement of the electronic tax, Nigeria had a formal structure for tax collection. However, the structure is expected to have been constantly overhauled to accommodate any technological inclusion and tax collection improvement. Besides, the structure had been variously accused by some researchers for i) fraught with maladministration to occasion overhauling (Adegbeie, Folajimi & Akinyemi, 2020); ii) taxes were paid without evidence leading to obstruction of financial reporting; when a strategy to circumvent this absence of financial reporting was introduced, it also failed due to forgery (Adegieetal, 2020); iii) the level of compliance by Nigeria compared to other countries was abysmally low which was a justification for the abrupt migration from the manual system which was fraught with leakages in the collection process orchestrated by tax officers and taxpayers as a result of the face-to-face interface between the two which usually open up negotiation table (Oladele, Aribaba, Adediran & Babatunde, 2020).

Other problems of the manual system resulting from the earlier tax structure include iv) the absence of absolute records on each tax payers for decision making; v) absence of regular, updated and

required information on taxes collected and collectable; and vi) the challenges in tax collection manually may be responsible for the gaps that existed in the estimated revenue as against its collection (Mutia, 2011) as cited by Akpubi *et al.*, 2019).

Thus, the electronic tax system if adopted and implemented as necessary will provide adequate answers to the lapses highlighted in the preceding paragraphs. The expectation of this study is that with introduction of electronic system, there will be noticeable improvement in tax collection. In line with this expectation, Nisar (2013) argued that embracing the electronic taxation platform will be the better remedy for tax collection to close any gap that may arise from manual system. The focus of this study is therefore to assess whether the introduction of electronic tax system produced high tax collection when it is compared with the manual system results.

The objective of the study is to examine for any significant difference between the pre and post implementation of electronic tax system on tax collection in Nigeria. The specific objectives are to i) assess for any significant difference in the non-oil tax collection before and after the implementation of electronic tax system in the period of study; ii) identify any significant difference in the oil tax collection before and after the implementation of electronic tax system in the period; and iii) evaluate any significant difference in the total tax collection before and after the implementation of electronic tax system in the period under study. The respective null hypotheses are by implication and shall be tested accordingly in support of the objectives of the study.

The study covered a period of ten years from years 2011 to 2020. The researcher is of the view that five years (2011 to 2015) before the electronic tax system and five years (2016 to 2020) after such implementation will be sufficient for reasonable comparison of tax collection. Besides, the yearly data available is up year 2020 at the time of this study. The year 2015 is assumed in this study to be part of the pre electronic tax (e-tax) period to allow for fluctuations in transition to full implementation. Besides, the e-tax collection commenced in the second quarter of 2015; a period that could be described as a testing or parallel to provide for comments, observations and corrections to provide for adequate implementation.

CONCEPTUAL REVIEWS

Electronic Tax:

According to Adebayo and Idowu (2020), e-tax system is an innovation newly introduced in an already existing system while e-taxation is the process of assessing, collecting, and administering the taxation process through electronic media. In the words of E-taxation is one of the ways through which governments around the world utilize information and communication technologies to improve the delivery of public services and the dissemination of public administration information to the public. Umenweke and Ifediora (2016) opine that e-taxation is an automated process gradually phasing out the manual tax administration globally. It is achieved as taxpayers pay their taxes electronically quickly from the comfort of their homes, workplaces and other places where internet is available.

E-tax payment system is one of the ways through which governments globally make use of information and communication technologies to enhance the provision of public services and the circulation of public administration information to the society (Che-Azmi & Kamarulzaman, 2014). Wasao, (2014) describes electronic tax system as an online system or channel where taxpayers are able to have access or permit to the platform through the use of internet, in other to have access to all the services provided by the tax authority such as the registration for a tax identification number, electronic tax filing of tax returns.

Electronic tax system is a web enabled and secured application system that provides a fully-integrated and automated solution for administration of domestic taxes. It enables tax payers to register, returns filing, payment registration to allow for tax payments and status inquiries with real-time monitoring of accounts (Waweru, 2013). The electronic tax system provides education and information to tax payers through electronic registration, filing and payment. In general, the e-tax system is a comprehensive internet portal that can be accessed electronically and which provides tax payers with a safe self-service option package, a single point of information and action, and does not require intervention by tax administration personnel (Jimenez, Sionnaigh & Kamenov, 2013).

Electronic tax system forms part of the revenue collection reforms by FIRS whose main motive is enhancing tax collections and tax efficiency and thus, tax revenues have been increasing rapidly due to the country's rapid economic development accelerated by the new systems (Atika, 2012). It is a system for submitting tax documents and remitting tax due to the tax authority through internet or direct connection, usually without the need to submit any paper document. E-tax is an e-government application that allows for the administration and collection of tax (Chang & Hung, 2005).

Electronic tax system, therefore can be described as the electronic practice where any tax payer is allowed freely to process its tax matters at any time but within the defined time frame by the tax authority for such tax matters, eliminating all tax manual huddles, obtain immediate result and updating his relevant tax records accordingly.

EMPIRICAL LITERATURE REVIEW

Adebayo and Idowu (2020) examined the impact of electronic taxation and revenue generation effectiveness in the era of Treasury Single Account operations with a view to determining its trend and effects on Gross Domestic Production in Nigeria. Secondary data were extracted from Federal Inland Revenue Service (FIRS), Central Bank of Nigeria and Economic Reports from 2010 to 2019. The data were grouped into pre and post e-taxation which were compared using a pre post technique of analysis. The results revealed that before e-taxation, revenue generation was below average while the tax revenue significantly improved after the e-taxation.

Ajala and Adegbe (2020) investigated the effect of information technology on effective tax assessment in Nigeria. The study adopted survey research design with a population of 2,857-management and administrative staff of targeted respondents. Krejcie and Morgan' formula was used to determine the sample size of 641. Descriptive statistics and inferential statistics used for data analysis revealed that information technology had a positive statistical significant effect on effective tax assessment

Chijioke, Leonard, Bossco and Amaefule (2018) examined the impact of e-taxation on Nigeria's revenue and economic growth. Secondary data were extracted from the Statistical and Economic Reports on quarterly basis from second quarter 2013 to fourth quarter 2016. The data were grouped

into two that is, pre e-tax period and post e-tax period. Findings from the study revealed that the implementation of electronic taxation has not improved tax revenue, federally collected revenue and tax-to-GDP ratio in Nigeria.

Ofurum, Amaefule, Okanya, and Amaefule (2018) assessed the impact of e-taxation on Nigeria's revenue and economic growth with a pre-post e-taxation analysis. Secondary data were extracted to determine the pre-post technique called a paired sample t-test. The study found that the implementation of e-taxation has not improved tax revenue, federally collected revenue and tax-to-GDP ratio in Nigeria.

Olurankinse and Oladeji (2018) conducted a study on self-assessment, electronic-taxation payment system and revenue generation in Nigeria. The study was to assess how self-assessment tax system can enhance tax revenue and evaluate how e-taxation payment system can improve revenue generation. Data were collected through primary sources. The data was analysed using Pearson's product moment correlation coefficient and regression. The result found out that there was a significant relationship between compliance enforcement of tax payers in the payment of tax and revenue generation.

Olaoye and Atilola (2018) carried out an examination of the effect of e-tax payment on revenue generation in Nigeria. The study covered six years period to second quarter of 2018 with a pre and post e-tax grouping. The major data analysis technique used was the paired sampled t-test for the purpose comparing the means of the pre and post e-tax revenue generation. The findings revealed that there i) was insignificant positive difference between pre and post value added tax revenue ii) was a positive insignificant difference between pre and post company income tax revenue and iii) is a positive insignificant difference between pre and post capital gains tax revenue.

Allahverd, Alagoz, and Ortakapoz (2017) examined the effect of e-taxation system on tax revenue and cost in Turkey, the study used secondary data of the Turkish revenue authority, the data were examined in two groups as pre-electronic tax period and post-electronic tax period. Mann-Whitney

U Test was used to analyse the data. The result revealed that the transition to electronic tax system positively affected the tax revenues and reduced the cost per tax.

Maisiba and Atambo (2016) carried out a study in Rwanda and investigated the effect of electronic tax management system of tax collection. Both primary and secondary sources of data were used with their relevant tools. The result of the investigation discovered that e-tax payment contributes to timely tax payment and reduced operational costs.

Bett and Yudah (2017) examined the contribution of e-tax system as a strategy for revenue collection at Kenya Revenue Authority (KRA), Rift Valley Region, Kenya. The study employed correlational research design and primary data were collected from 76 respondents using a five-point Likert scale. Multiple-regression was used as inferential statistics to analyse the data and the result obtained showed that online tax payment registration, online tax return processing, online compliance and monitoring activities and electronic tax payments have a significant contribution on revenue collection at KRA.

Ifere and Eko (2014) examined the tax innovation, administration and revenue generation in Cross River State. The study employed qualitative research technique using a structured questionnaire to access data from the three senatorial districts in Cross River State. The study using an analytical statistics of descriptive and regression analysis found significant degree of inefficiency in the administration of taxes in Cross River State.

Okoye and Ezejiofor (2014) investigated the impact of e-taxation on revenue generation in Enugu state, Nigeria. The paper set to ascertain whether e-taxation can resolve the issue of tax evasion and prevent corrupt practice by tax officials. The study collected data from primary source and was analysed using Z-test statistics. The findings showed that e-taxation can enhance internally generated revenue and reduce the issue of tax evasion in state.

METHODOLOGY

The study examines whether or not there is a significant difference between the performance indicators of pre and post implementation of electronic system of tax collection in Nigeria. Secondary data were extracted from the Tax Statistics / Report of the Federal Inland Revenue Service (FIRS) from years 2011 to 2020. From which the required figures of total tax, non-oil tax and oil tax were extracted. To achieve the specific objectives of the study that involved the comparison of pre and post electronic tax collections, the paired t-test was used in analysing the data. This indicated that there are two paired populations; the two populations in this study are before and after implementation of e-tax which are compared.

DATA PRESENTATION, RESULTS AND DISCUSSION

The data extracted from the Tax Statistics / Report – Federal Inland Revenue Service (FIRS) from 2011 to 2020 for the purpose of this study is presented in table 1:

Table 1: Tax Statistics / Report of Tax Collected from 2011 to 2020 in Billion Naira

Year	Non-oil (₦)	Oil (₦)	Total (₦)
2011	715.44	3,070.59	3,786.03
2012	846.59	3,201.32	4,047.91
2013	998.44	2,666.37	3,664.81
2014	1,204.83	2,453.95	3,658.78
2015	1,408.43	1,289.96	2,698.39
Total	5,173.73	12,682.19	17,855.92
2016	1,124.72	1,157.81	2,282.53
2017	1,262.01	1,520.48	2,782.49
2018	1,444.71	2,467.58	3,912.29
2019	1,650.80	2,114.27	3,765.07
2020	1,533.12	1,516.99	3,050.11
Total	7,015.36	8,777.13	15,792.49

Source: Tax Statistics / Report – FIRS

From table 1, the total non-oil tax collected in Billion from 2011 to 2015 treated as pre amounted to ₦5,173.73 compared with the figure of ₦7,015.36 and from 2016 to 2020 representing the post e-tax collection. This revealed an increase of ₦1,841.63 in billion from a change over from manual

system of tax collection to electronic method in respect of non-oil. On the other, there was a noticeable decrease between the pre and post e-tax collection of ₦3,905.06 billion in respect of oil tax between 2011 to 2015 and 2016 to 2020. That is to state that implementation of e-tax has greatly reduced the amount of oil tax collection in the period. The overall effect is still a reduction of tax collection by ₦2,063.43b meaning that the impact of introducing e-tax has not been achieved within the period under study. However, this may improve in the long run as a result of FIRS policy that must be embraced whatever may be the responses of the tax payers.

Table 2: Paired t test output data: Non-Oil Tax

Paired t test						
Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
Pre	5	1034.746	123.9446	277.1486	690.6205	1378.871
Post	5	1403.072	94.17901	210.5907	1141.589	1664.555
diff	5	-368.326	61.383	137.2566	-538.7525	-197.8994

mean(diff) = mean(Pre - Post) t = -6.0005
 Ho: mean(diff) = 0 degrees of freedom = 4

Ha: mean(diff) < 0 Ha: mean(diff) != 0 Ha: mean(diff) > 0
 Pr(T < t) = 0.0019 Pr(|T| > |t|) = 0.0039 Pr(T > t) = 0.9981

The table 2 shows the result of the paired t test of significant difference between the amount collected in respect of non-oil tax before and after the advent of electronic tax system. As observed in this table, the absolute value of the calculated t value (-6.0005) is greater than the t critical value (1.96) at 5% level of significance. This is an indication that the tax collected before and after the implementation of e-tax system is significantly different. From the mean scores, the amount after the new system was higher than before the new system. Therefore, the implied null hypothesis will not be accepted. These results are in line with the studies of Adebayo and Idowu (2020), Ajala and Adegbe (2020), Olurankinse and Oladeji (2018) and Allahverd, Alagoz and ortakapoz (2017) that examined the effect of electronic tax on revenue generation with significant differences between

pre and post revenue collections. However, the results of the studies conducted by Chijioke, Leonard, Bossco and Amaefule (2018), Ofurum, Amaefule Okanya and Amaefule (2018) and Olaoye and Atilola (2018) revealed insignificant differences position between the pre and post electronic tax system.

The justification for these results could be due to i) FIRS may want to prove the efficiency of the new tax regime by doubling its efforts to collect all due taxes and ii) Enforcement by the tax authority making it mandatory for the tax payers to comply or face stiff penalty.

Table 3: Paired t test output data: Oil Tax

The result in Table 3 represents the paired t test of oil tax between the pre (2011 to 2015) and post (2016 to 2020):

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
Pre	5	2536.438	339.4688	759.0752	1593.922	3478.954
Post	5	1755.426	235.0669	525.6255	1102.776	2408.076
diff	5	781.012	426.6436	954.004	-403.5404	1965.564

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mean(diff) = mean(Pre - Post)                                t = 1.8306
Ho: mean(diff) = 0                                           degrees of freedom = 4

Ha: mean(diff) < 0      Ha: mean(diff) != 0      Ha: mean(diff) > 0
Pr(T < t) = 0.9294      Pr(|T| > |t|) = 0.1411      Pr(T > t) = 0.0706

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As revealed in table 3, the oil tax position after e-tax regime was not significant; the remark value is 0.1411, with the absolute figure of t value of 1.8306 which is greater than the t critical value (1.96) at 5% level of significant. The corresponding hypothesis will be accepted since there was no significant difference between the pre and post e-tax (however there was a difference only that it was not significant). On the other hand, the implementation of the new tax system has not

improved the value of tax collection in the period under review instead the tax collected was reasonably low.

These results are in agreement with the studies conducted by Chijioke, Leonard, Bossco and Amaefule (2018), Ofurum, Amaefule Okanya and Amaefule (2018), Olaoye and Atilola (2018) and Okoye and Ezejiofor (2014) that revealed insignificant differences position between the pre and post electronic tax system. On the other hand the following studies carried out by Adebayo and Idowu (2020), Ajala and Adegbe (2020), Olurankinse and Oladeji (2018) and Allahverd, Alagoz and Ortakapoz (2017) had contrary results, meaning significant differences between the pre and post adoption of electronic tax system.

Reasons for the insignificant difference in tax collection in the new tax system may be due to i) tax payers' culture of transition to a new policy especially where it involves cash outflow; ii) fear of negative implication where for instance no parallel tests are carried out; iii) inefficient and possibly inappropriate means of sensitizing this policy or absence of relevant awareness of the proposed change before implementation on part of the tax payers; and iv) absence of recognizing the inputs or responses from the tax payers.

The table 4 reveals the paired t test of the total tax that is, non-oil and oil taxes between the pre (2011 to 2015) and post (2016 to 2020):

e-tax has achieved its objective by recording higher movement in tax collection. On the other hand, the result in respect of oil tax shows that there was a difference but it is not significant. The result indicates no improvement in tax collection after the implementation of the e-tax system. Instead of increment, it was a high difference; therefore the objective of the new system is not necessary.

Based on these findings, the study recommended that the FIRS should revisit this new system for

- i) reorientation and sensitization on regular basis until the tax payers satisfied with new method;
- ii) implementation to be in phases following the responses from the tax payers and their consultants; and
- iii) FIRS must be ready and willing to listen and address relevant inputs and responses from the tax payers if the objectives of new system must be achieved.

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A COMPARATIVE STUDY OF GENETIC ALGORITHM AND NEURAL NETWORK MODEL IN BANKRUPTCY PREDICTION OF MANUFACTURING FIRMS IN NIGERIA

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Abstract

Previous studies have established the comparative accuracies of statistical failure models in Nigeria. However, the assumptions of these models often limit their practical application. The study, therefore, compares two models developed using AI techniques, the genetic algorithm (GA) and neural network on a sample of quoted manufacturing firms in Nigeria. This study adopts a quantitative approach and utilises a sample of sixty-six (66) companies listed on the Nigerian Stock Exchange (NSE), after excluding firms from the financial, natural, and oil & gas sectors. The study relied on secondary data from annual financial statements. The McNemar test was utilised to compare the accuracies of the two models. The model results showed a significant difference in the classification accuracies of the GA (96.94%; 97.85%) compared with the neural network (92.2%; 94.4%) models. In other words, the GA model outperformed the neural network model in corporate bankruptcy prediction. The inclusion of selected corporate governance variables also improved the accuracy of the models. The results demonstrate the practicality of using GA in a different context from prior western studies with different regulatory and institutional regimes.

Keywords: Bankruptcy, Genetic Algorithm, Neural Network, Corporate Governance.

1.1 Background of the Study

The issue of corporate bankruptcy has gained prominence in the business and finance literature. This follows from globalisation and intense competition which has restricted the profitability of most firms (Hajiamiri, Shahraki, & Barakati, 2014), making bankruptcy probable for non-adaptable firms (Balcaen & Ooghe, 2004a). As a result, bankruptcy has remained a concern to various stakeholders, because of its contagious effect (Doumpos & Zopoudinis, 1999); and, ability to destabilize the economic system in various ways, such as increasing unemployment and poverty level, depriving people, especially creditors of their legitimate earnings, intensifying the crime rate, reduction in the volume of tax earnings, and creates social and economic costs to a nation (Mukkamala, Tilve, Sung, Ribeiro, & Vieira, 2006; Kim & Han, 2003; McKee & Lensberg, 2002).

In light of this, bankruptcy has remained a dominant topic of interest in accounting, auditing, and finance for the past three decades (Cheng, Chen, & Fu, 2006). And models have emerged from the 60's till date (Altman, 1968; Adnan Aziz, & Dar, 2006). Past models are mainly statistical, with an average of sixty-four percent of previous studies using such (Etemadi, Rostamy, & Dehkordi, 2009; Bellovary, Giacomino, & Akers, 2007; Adnan Aziz & Dar, 2006). However, recent studies have transcended from the use of traditional statistical models to include other techniques which mainly depend on artificial intelligence (AI). These techniques include decision

trees, neural networks, support vector machines, rough sets, case-based reasoning, Bayesian networks, among others (Ahn & Kim, 2009; Shin & Lee, 2002).

The techniques evolved along with advancements in computer systems, and are capable of providing better solutions for complex problems, such as bankruptcy prediction (Mukkamala, Tilve, Sung, Ribeiro, & Vieira, 2006). The popular ones include inductive learning methods, neural networks, support vector machines, genetic algorithms, among others (Alaka et al., 2018; Shin & Lee, 2002). Prior studies have employed Genetic Algorithms (GA) to develop hybrid models because of its capability in extracting optimal rules that can be integrated into any system and higher accuracy than individual models (Kirkos, 2015; Martin, Madhusudhnan, Lakshmi, & Venkatesan, 2011; Shin & Lee, 2002; Back, Laitinen, & Sere, 1996a,b).

The GAs have been applied in a wide range of applications (Shin & Han, 1999; Colin, 1994), such as trading systems (Deboeck, 1994), stock selection (Mahfoud & Mani, 1995), bankruptcy prediction (Shin & Lee, 2002), etc. The GA is an optimization tool that does not rely on any distributional assumptions about the variables (Kuri-Morales & Aldana-Bobadilla, 2013; Nanda & Pendharkar, 2001). Studies that utilise the GA, reports that in most instances it outperforms other techniques (Bateni & Asghari, 2016), and can handle the influence of human intuition usually applied in selecting financial ratios for bankruptcy prediction models (Lakshmi, Martin, & Venkatesan, 2016).

The Nigerian manufacturing sector has experienced great shocks in recent years (Ani & Ugwunta, 2012). Between the period of Q1:2002 to Q3:2017, the Nigerian Stock Exchange delisted a total of 85 companies from its daily official list. 61 out of the 85 firms were delisted based on regulatory reasons; this constitutes 71.76 percent of the total number of companies delisted in the review period, while 13 of the firms were delisted voluntarily. Against this backdrop, the study develops a model using GA and compares it to a neural network model for bankruptcy prediction of Nigerian manufacturing firms.

1.2 Statement of the Problem

The obnoxious state of the Nigerian manufacturing sector has created a dire need for accurate prediction models for forecasting the failure outcomes of companies. Prior studies have focused on the banking sector, using traditional statistical models, such as discriminant and ratio analysis (Nwidobie, 2017; Egbunike & Ibeanuka, 2015; Ezejiolor, Nzewi, & Okoye, 2014; Pam, 2013; Ebiringa, 2011), while few have investigated the manufacturing sector (Hur-Yagba, Okeji, & Ayuba, 2015; Ani & Ugwunta, 2012). Despite the success of traditional statistical models they are often subject to certain assumptions, such as linearity, normality, multicollinearity, among others (Dimitras, Zanakis, & Zopounidis, 1996; Back, Laitinen, & Sere, 1996a,b). They are often inadequate in identifying and estimating key parameters which limit their application in the real world (Hawley, Johnson, & Raina, 1990; Zhu & Rohwer, 1996). And, the 'high-dimensional' properties of data affect the classification accuracies of traditional statistical models (Zhang & Wu, 2011).

However, recently from the 90's there has been a heightened use and application of artificial

intelligence to bankruptcy prediction problems, with Neural Networks (NNs) being among the first (Alaka et al., 2018; Atiya, 2001; Wilson & Sharda, 1994, Serrano-Cinca, 1993; Coats & Fant, 1993). Prior studies have confirmed the superiority of NNs to discriminant or logistic technique in the Nigerian context (Eriki & Udegbonam, 2013; Farinde, 2013), for banks (Yahaya, Nasiru, & Ebgejiogu, 2017; Farinde, 2013), investment interest rate (Enyindah & Onwuachu 2016), the stock market (Eriki & Udegbonam, 2013), and insurance companies (Ibiwoye, Ajibola, & Sogunro, 2012).

Studies have under-investigated the application of AI to the subject of bankruptcy prediction in Nigeria. The obvious lack of empiricism on the subject stemmed the researcher's interest in the subject. A recent study identifies the GA as a data mining technique that contributes to decision-making (Lin, Ke, & Tsai, 2017) and provides new insights into bankruptcy prediction (McKee & Lensberg, 2002). In addition, the inclusion of corporate governance variables in GA feature selection has been under-investigated. According to Brédart (2014b), studies should be directed to this under-investigated aspect of corporate bankruptcy. Thus, the addition of corporate governance variables may (or may not) improve the predictive power of bankruptcy models (Platt & Platt, 2012; Lajili, & Zéghal, 2010; Chang, 2009; Fich & Slezak, 2008; Donoher, 2004).

1.3 Objective of the Study

The broad objective of the study is to compare the predictive accuracy of genetic algorithm and neural network models in predicting corporate bankruptcy of Nigerian manufacturing firms. The study specifically examines the following:

1. To compare the predictive accuracy of GA with neural network in the prediction of corporate bankruptcy.
2. To ascertain if the predictive accuracy of the GA model can be improved from inclusion of corporate governance variables.

1.4 Statement of Hypotheses

The hypotheses are stated in the alternate form as follows:

- H₁: There is a significant comparative difference in the predictive accuracy of GA and the neural network model in predicting corporate bankruptcy.
- H₂: The predictive accuracy of the GA model cannot be enhanced from inclusion of corporate governance variables.

2.0 Literature Review

2.1 Historical Perspective on Bankruptcy Prediction Models (BPMs)

The evolution of BPMs cannot be discussed without recourse to the studies by the Bureau of Business Research (BBR) (1930), Ramser and Foster (1931), Fitzpatrick (1932), Smith and Winakor (1935), Merwin (1942), Chudson (1945), Jackendoff (1962). Beaver (1966) is regarded as the pioneer in univariate analysis. The univariate analysis emphasizes a single factor/ratio and performs classification. Then based on the 'optimal cut off point' – the point at which the percentage of misclassifications is minimized – a firm is classified as failing or non-failing. Despite its simplicity, it was based on the assumption that the functional form of the relationship between a measure or ratio and the failure status is linear (Balcaen & Ooghe, 2004a). This assumption was often violated, where many ratios show a non-linear relationship with the failure status (Keasey &

Watson, 1991).

Another limitation of the approach is the ‘inconsistency problem’, as firm classification can only occur for one ratio at a time, which may give inconsistent and confusing classifications results for different ratios on the same firm (Altman, 1968). Secondly, the difficulty in assessing the importance of any of the ratios in isolation, because most variables are highly correlated (Cybinski, 1998). Finally, the optimal cut-off points are chosen by ‘trial and error’ and on an ‘ex-post’ basis, which means that the actual failure status of the companies in the sample is known (Bilderbeek, 1973). Consequently, the cut-off points may be sample-specific and the classification accuracy of the univariate model may be (much) lower when the model is used in a predictive context (i.e. ‘ex-ante’) (Balcaen & Ooghe, 2004a). The limitation of the approach led to the development of ‘risk index’, which includes different ratios (Tamari, 1966; Moses & Liao, 1987). The major drawback of this approach was its subjective nature in the development of the index.

The first *multivariate* study was conducted by Professor Edward Altman in 1968, which developed the Z score model based on discriminant analysis (Altman, 1968). Thereafter followed studies by Deakin (1972), Edminster (1972), Blum (1974), and Altman, Haldeman, & Narayanan, (1977). And, in the '80s logistic regression was introduced and applied by Ohlson (1980).

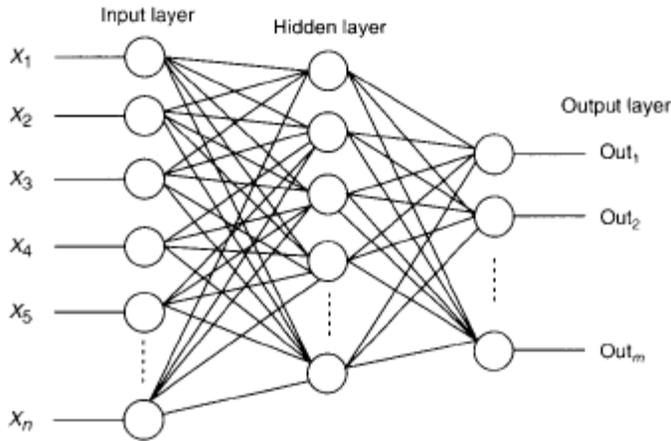
Broadly, bankruptcy prediction models are divided into parametric and non-parametric. Parametric models focus on symptoms of bankruptcy and could be univariate or multivariate (Adnan Aziz & Dar, 2006). The non-parametric models are mainly multivariate, based on machine learning which depends heavily on rule induction, and were introduced to improve upon the limitations of the classical statistical methods (Davalos, Leng, Feroz, & Cao, 2009; Andan & Dar, 2006; Varetto, 1998; Odom & Sharda, 1990). The most popular non-parametric models are artificial neural networks (ANN), hazard models, fuzzy models, genetic algorithms (GA) (Fejér-Király, 2015; Kiefer, 2014; Maghyereh & Awartani, 2014). Hybrid models are models in which several of the former models are combined (Fejér-Király, 2015; Davalos, Leng, Feroz, & Cao, 2009). They improve bankruptcy classification by combining the strengths of the different models, combining several classifiers into a multi-classifier model; can result in a classifier that outperforms single classifiers (Davalos, Leng, Feroz, & Cao, 2009; Kolter & Maloof, 2007; Kumar & Ravi, 2007; Opitz & Maclin, 1999; Olmeda & Fernandez, 1997).

There are two types of multi-classifier models (Li & Sun, 2008); the hybrid model, which involves an optimizing model focused on manipulating the parameters for a classifier model that generates a classification (a class), and, a second type which combines the output of several classifiers into a single classifier, an ensemble (Lin & Mclean 2001; Jo & Han, 1996). Ensembles perform better than single classifiers but are more time consuming to develop since the contribution of each classifier needs to be determined and in some cases, different combinations need to be tried (Li & Sun, 2008).

2.2 Neural Networks (NNs)

Neural networks are inspired by neurobiological systems. According to Robert Hecht-Nielsen, one of the earliest inventors of neurocomputers, NN is “a computing system made up of several simple, highly interconnected processing elements which process information by their dynamic state responses to external inputs” (Caudill, 1989; Hecht-Nielsen, 1988). NNs have the most practical effect in the following three areas: modelling and forecasting, signal processing, and expert systems (Lippmann, 1987). NNs learn and adapt from a data set, and can capture non-linear relationships between variables.

Figure 1: A Neural Network Architecture



Source: Back, Laitinen, and Sere (1996); Panda, Chakraborty, and Pal (2008)

Let $I_p = (I_{p1}, I_{p2}, \dots, I_{pl})$, $p = 1, 2, \dots, N$ be the p th pattern among N input patterns. Where w_{ji} and w_{kj} are connection weights between the i th input neuron to the j th hidden neuron, and the j th hidden neuron to the k th output neuron, respectively (Panda, Chakraborty, & Pal, 2008).

Output from a neuron in the input layer is

$$O_{pi} = I_{pi}, \quad i = 1, 2, \dots, l$$

Output from a neuron in the hidden layer is

$$O_{pj} = f(NE_{pj}) = f\left(\sum_{i=1}^l w_{ji} O_{pi}\right), \quad j = 1, 2, \dots, m$$

Output from a neuron in the output layer is

$$O_{pk} = f(NE_{pk}) = f\left(\sum_{j=1}^m w_{kj} O_{pj}\right), \quad k = 1, 2, \dots, n$$

Where $f(\cdot)$ is the sigmoid transfer function given by $f(x) = 1/(1 + e^{-x})$.

The neurons of the network recognize meaningful patterns in the data. They process and transform the input – a vector of variables – by a vector of weights into one single output signal. The output signal of a neuron, in turn, is sent as an input signal to many other neurons and is possibly sent back to itself. As the signals are passed through the network via weighted interconnections between the neurons, the ‘network knowledge’ is stored (Hawley, Johnson, &

Raina, 1990; Coats & Fant, 1993). The process of working towards an appropriate mapping is also called ‘convergence’ (Coats & Fant, 1993). The method of neural networks is based on ‘supervised’ learning (Balcaen & Ooghe, 2004b).

There are several NNs methods, such as backpropagation (Dwyer, 1992), SOF-self organizing map (Alam, Booth, Lee, & Thordarson, 2000). However, the major weakness lies in the fact that they cannot explain causal relationships among their variables (i.e., financial ratios), which constrains their application to management problems (Lee & Choi, 2013). The advantages include, first, NNs can analyse complex patterns quickly and with a high accuracy level (Shachmurove, 2002) and they can learn from examples, without any pre-programmed knowledge (Back, Laitinen, & Sere, 1996). Secondly, they are not subject to the restrictive statistical assumptions of MDA. More, in particular, no distributional assumptions are imposed and the input data do not need to conform to linearity (Coats & Fant, 1993; Tucker, 1996; Cybinski, 2000; Shachmurove, 2002). Thirdly, non-numeric data can easily be included in NN, because of the absence of the linearity constraint (Coats & Fant, 1993). Fourthly, NN is perfectly suited for pattern recognition and classification in unstructured environments with ‘noisy data’, which are incomplete or inconsistent (Hawley, Johnson, & Raina, 1990; Tucker, 1996; Shachmurove, 2002). NNs tolerate errors and missing values by making use of ‘filling in the gaps’. In addition, NNs overcome the problem of autocorrelation, which frequently arises in time series data (Hawley, Johnson, & Raina, 1990; Cybinski, 2000). Fifthly, the NN technique can be considered user-friendly as it offers a clear ‘failure/non-failure’ output.

The application of NNs to bankruptcy prediction is linked to Messier and Hansen (1988), Odom and Sharda (1990), Coats and Fant (1993), Guan (1993), Tsukuda and Baba (1994), and Altman, Marco, and Varetto (1994). In predicting company failure, NNs are robust to smaller sample sizes and highly adaptable than many other techniques (Cybinski, 2000). However, NNs possess certain limitations, such as; the difficulty in building models as a result of many parameters to be set by heuristics. Secondly, is the danger of overfitting, and its lack of explanation ability, i.e., the ‘*black box*’ problem, as users do not also easily comprehend the final rules which the models acquire (Shin & Lee, 2002). They are also sensitive to the ‘garbage in – garbage out’ problem. Consequently, one has to carefully select the variables that are included in the training samples and assure the quality of the data. Thirdly, as a NN can be made to fit the data ‘like a glove’; it runs the risk of over-parametrization or over-fitting. This results in a sample-specific model with low generalizing ability.

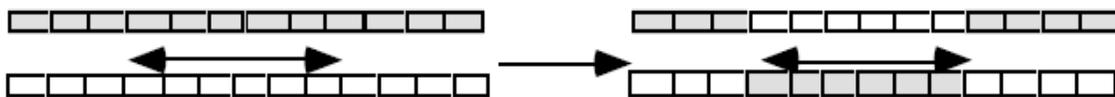
2.3 Genetic Algorithm (GA)

Genetic algorithm (GA) is a [metaheuristic](#) inspired by the process of [natural selection](#) and belongs to the larger class of [Evolutionary Algorithms](#) (EA). GA is an evolutionary computing model based on stochastic, adaptive search methods for an optimal solution (Davalos, Leng, Feroz, & Cao, 2009). GA simulates Darwinian evolution and relies on bio-inspired operators; such as *mutation*, *crossover* and *selection* (Mitchell, 1998; Back, Laitinen, & Sere, 1996; Goldberg, 1989; Holland, 1975). It maintains a population of chromosomes, where a chromosome is a candidate solution to the problem we want to solve. Chromosomes are often called *strings* in a genetic algorithm context. A string in its turn consists of some genes, which may take some number of

values, called alleles. The genetic algorithm terms for genes and alleles are *features* and *values*. Associated with each string is a *fitness value*, which determines how 'good' a string is. The fitness value is determined by a *fitness function* (Back, Laitinen, & Sere, 1996). Three genetic operators are mostly used in these algorithms: reproduction, crossover, and mutation (Etemadi, Rostamy, & Dehkordi, 2009).

1. **Reproduction:** The reproduction operator simply chooses an individual in the current population and copies it without changes into the new population (Etemadi, Rostamy, & Dehkordi, 2009). It is a process in which strings are copied onto the next generation. Strings with a higher fitness value have more chance of making it to the next generation. Different schemes can be used to determine which strings survive into the next generation. A frequently used method is *roulette wheel selection*, where a roulette wheel is divided into slots, one for each string. The slots are sized according to the fitness of the strings. Hence, when we spin the wheel, the best strings are the most likely to be selected. Another well-known method is *ranking*. Here, the strings are sorted by their fitness value, and each string is assigned an offspring count that is determined solely by its rank (Back, Laitinen, & Sere, 1996a,b).
2. **Crossover:** Two-parent individuals are selected and a subtree is picked on each one. Then crossover swaps the nodes and their relative sub-trees from one parent to the other. That is a part of one string is combined with a part of another string. This way, it combines the good parts of one string with the good parts of another string, yielding an even better string after the operation. This operation takes two strings, the parents, and produces two new ones, the offspring (Back, Laitinen, & Sere, 1996a,b). This operator must ensure respect for the depth limits. If a condition is violated the too-large offspring is simply replaced by one of the parents. Other parameters specify the frequency with which internal or external points are selected as crossover points (Etemadi, Rostamy, & Dehkordi, 2009).

Figure 2: Type a Crossover



Source: Back, B., Laitinen, T., Sere, K., & van Wezel, M. (1996). Choosing bankruptcy predictors using discriminant analysis, logit analysis, and genetic algorithms. *Turku Centre for Computer Science Technical Report, 40*, 1-18.

Figure 3: Type b Crossover



Source: Back, B., Laitinen, T., Sere, K., & van Wezel, M. (1996). Choosing bankruptcy predictors using discriminant analysis, logit analysis, and genetic algorithms. *Turku Centre for Computer Science Technical Report, 40*, 1-18.

3. **Mutation:** In mutation, a randomly selected gene in a string takes a new value. This operator aims to introduce new genetic material in the population, or at least prevent the loss of it. Under mutation, a gene can get a value that did not occur in the population before, or that has been lost due to reproduction. The mutation operator can be applied to either a function

node or a terminal node. A node in the tree is randomly selected. If the chosen node is a terminal it is simply replaced by another terminal. If it is a function and point mutation is to be performed, it is replaced by a new function with the same arity. If instead, tree mutation is to be carried out, a new function node (not necessarily with the same arity) is chosen, and the original node together with its relative subtree is substituted by a new randomly generated subtree. A depth ramp is used to set bounds on size when generating the replacement subtree. Naturally, it is to check that this replacement does not violate the depth limit. If this happens mutation just reproduces the original tree into the new generation. Further parameters specify the probability with which internal or external points are selected as mutation points.

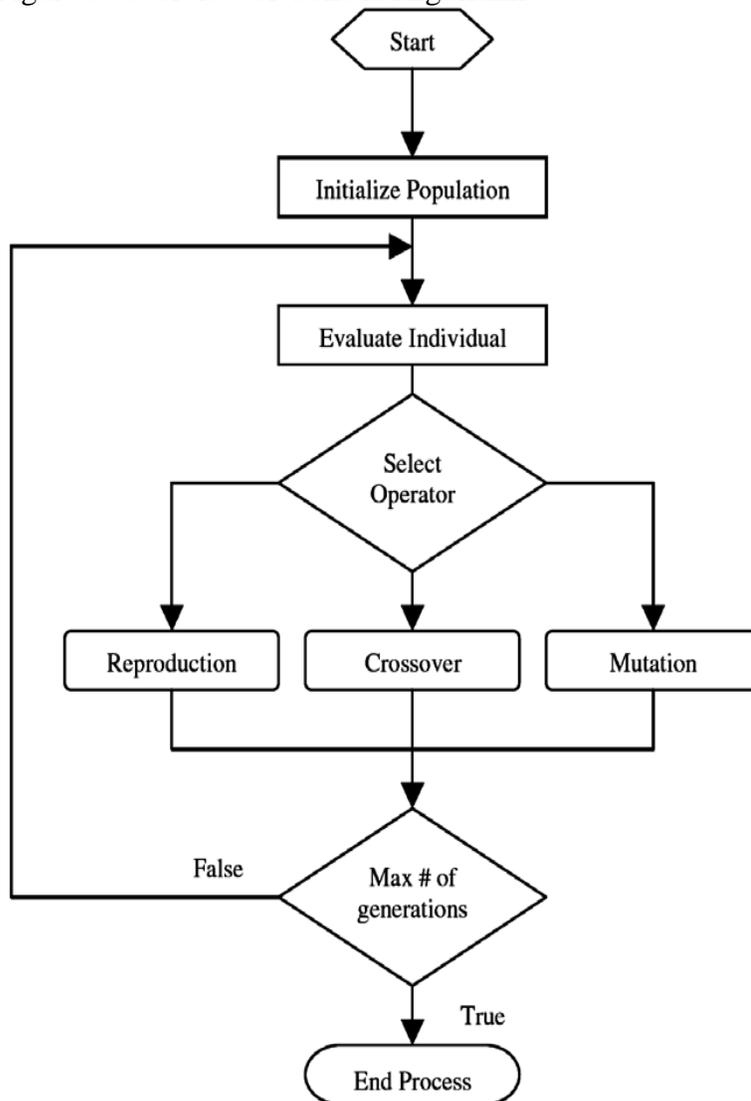
Figure 4: Mutation



Source: Back, B., Laitinen, T., Sere, K., & van Wezel, M. (1996). Choosing bankruptcy predictors using discriminant analysis, logit analysis, and genetic algorithms. *Turku Centre for Computer Science Technical Report, 40*, 1-18.

These three operators (*reproduction*, *crossover*, and *mutation*) usually determine the performance of GA in problem-solving (Etemadi, Rostamy, & Dehkordi, 2009). Its wide applicability stems from the fact that GAs are capable of extracting optimal rules that can be integrated into any system (Kirkos, 2015; Martin, Madhusudhnan, Lakshmi, & Venkatesan, 2011; Shin & Lee, 2002; Back, Laitinen, & Sere, 1996a,b). Moreover, in GAs the nature of the optimization model does not need to be known (Schreyer, 2006), and does not rely on any distributional assumptions about the variables (Kuri-Morales & Aldana-Bobadilla, 2013; Nanda & Pendharkar, 2001). The limitation of GAs includes the large number of parameters to be included which requires significant computational resources from a very large number of function calls (Schreyer, 2006).

Figure 5: Overview of Genetic Algorithm



Source: Etemadi, H., Rostamy, A. A. A., & Dehkordi, H. F. (2009). A genetic programming model for bankruptcy prediction: Empirical evidence from Iran. *Expert Systems with Applications*, 36(2), 3199-3207.

2.4 Corporate Governance

Studies have shown that corporate governance plays a role in the financial distress of a company (Brédart, 2014b; Platt & Platt, 2012; Lajili, & Zéghal, 2010; Chang, 2009; Fich & Slezak, 2008; Donohoe, 2004; Daily & Dalton, 1994; Gales & Kesner, 1994; Hambrick & D'Aveni, 1992; Gilson, 1990). According to Fich and Slezak (2008), the influence of governance can be twofold: (1) Poor governance can facilitate accounting manipulation and distort the components of the prediction model, and (2) the ability to manage the firm during periods of distress may depend on the governance structure.

1. **Board Size.** From an agency theory, the argument in favour of a larger number of directors is that the increase raises their disciplinary control over the CEO. From a resource dependence perspective, it implies more external links (Goodstein, Gautam, & Boeker, 1994) and

diversification of the expertise (Zahra & Pearce, 1989). Fich and Slezak (2008) find a positive relationship between board size and bankruptcy probability. For each additional director, the risk of bankruptcy increases by 25–38 percent depending on whether the Z-score or the Interest Coverage Ratio (ICR) was the initial indicator of distress. Darrat, Gray, Park, and Wu (2016) find that having larger boards reduces the risk of bankruptcy only for complex firms.

2. **Board Ownership.** Increased ownership positions by inside directors, however, reduce the bankruptcy hazard (Fich & Slezak, 2008). Darrat, Gray, Park, and Wu (2016) find that the proportion of inside directors on the board is inversely associated with the risk of bankruptcy in firms that require more specialist knowledge and that the reverse is true of technically unsophisticated firms.
3. **Board Structure.** Board monitoring is not only a function of the composition of the board as a whole but also of the structure and composition of the subcommittees. According to Chen and Wu (2016) Board committees provide benefits (specialization, efficiency, and accountability benefits) and costs (information segregation). Kesner (1988) maintains that most important board decisions originate at the committee level, and Vance (1983) argues that four board committees greatly influence corporate activities: audit, executive, compensation, nomination committee. Adams Rangunathan and Tumarkin (2015) find that 52% of board activity in S&P 1500 firms takes place at the committee level after the implementation of Sarbanes-Oxley.
4. **The proportion of women on the Board.** Boards with high female representation experience a 53% higher return on equity, a 66% higher return on invested capital and a 42% higher return on sales (Joy, Carter, Wagner, & Narayanan, 2007). One study documents that having just a female director on the board reduces the risk of bankruptcy by 20%. Studies have shown that the presence of women directors, instils new governance practices (Singh & Vinnicombe, 2002), become more civilised and sensitive to other perspectives (Fondas & Salsalos, 2000), reduce ‘game playing’ (Singh, 2008) and ask more questions rather than nodding through decisions (Konrad, Kramer, & Erkut, 2008).
5. **CEO Duality.** Holding the role of both CEO and chairman of the board of directors makes evaluating managers more difficult and increases agency costs and entrenchment risks (Fama & Jensen, 1983; Lipton & Lorsch, 1992; Jensen, 1993). This is because the board, being in principle the organ in charge of controlling the actions of the managers, is headed by the very object of this overseeing (Brédart, 2014b). That is the reason why OECD (Note 1) (2004) recommends separating the two functions. CEO duality unifies the decision-making process (Anderson & Anthony, 1986; Brickley, Coles, & Jarrell, 1997) which as per agency perspective, may lead to risk-taking that may result in bankruptcy (Eisenhardt, 1989).
6. **Board Independence.** From an agency perspective, a greater proportion of outside directors on boards acts as monitors in situations where conflict of interest may arise (Jackling & Johl, 2009). According to Weisbach (1988), independent directors are in a better position to monitor the actions of the CEO. Studies by Daily, Dalton, and Cannella (2003), Elloumi and Gueyie (2001), and Hambrick and D’Aveni (1992) find that firms with a large proportion of independent directors show less likelihood to file for bankruptcy. Fich and Slezak (2008) observed that smaller boards with more independent or outside directors are more effective at avoiding bankruptcy.

Table 1: Major studies using Genetic Algorithm

Authors	Year	Method	Findings
Zelenkov, Fedorova, and Chekrizov	2017	Two-step classification method based on genetic algorithm. Classifiers of various models are trained at the first step and combined into the voting ensemble at the second step.	It found bankrupts (recall = 0.953) and not bankrupts (precision = 0.910) rather accurately than other tested models.
Georgescu	2017	The shape of type-2 membership functions, the parameters giving their spread and location in the fuzzy partitions and the set of fuzzy rules are evolved at the same time by encoding all together into the chromosome representation. The enhanced Karnik–Mendel algorithms are used for the centroid type-reduction and defuzzification stage.	The IT2FLSs by representing and capturing uncertainty with more degrees of freedom allows them to outperform T1FLS
Chou, Hsieh, and Qiu	2017	They used a fuzzy clustering algorithm for the classifier design, which was compared with a backpropagation neural network. Experimental results based on one to four years of financial data before the occurrence of bankruptcy were used to evaluate the performance of the proposed model.	The proposed model performed significantly well.
Bateni and Asghari	2016	A comparison of logit and GA models by identifying conditions under which a model performs better.	GA achieved 95 and 93.5 % accuracy rates in training and test samples, while logit achieved 77 and 75 % accuracy rates in training and test samples, respectively.
Hou	2016	The study used a K-means clustering algorithm on a sample of 24 A-share companies listed in the Shanghai Stock Exchange and Shenzhen Stock Exchange.	The K-means clustering algorithm based on a genetic algorithm is more accurate than the traditional clustering algorithm.

Authors	Year	Method	Findings
Min	2016a	Applied four different learning algorithms to heterogeneous random subspace ensemble: k-nearest neighbour (KNN), decision tree (DT), logistic regression (Logit), and support vector machines with RBF kernel (SVM-RBF).	The experimental results confirmed that the model outperformed other models in the study.
Min	2016b	Developed hybrid ensemble model that integrates bagging and random subspace method using genetic algorithm and compared the performance with other models.	The experimental results showed that the proposed model performed better than the other models.
Min	2016c	The genetic algorithm was used to select optimal or near-optimal instances to be used as input data by the bagging model.	The results showed that the proposed model outperformed the other models.
Szebenyi	2014	A comparison between GA and binary logistic regression.	The results showed that GA outperformed logistic regression.
Gordini	2014	The study employed multiple discriminant analysis and logistic regression (two main traditional techniques in default prediction modelling) to benchmark GA.	The results show that the best prediction results were obtained using GAs.
Zebardast, Javid, and Taherinia	2014	They predicted bankruptcy in firms accepted in TSE using artificial neural network (ANN) and genetic algorithm (GA).	The results of the two models were compared with each other. ANN achieved a precision of 91.2% on the whole. GA achieved 86.5% on the whole.
Hajiamiri, Shahraki, and Barakati	2014	They deployed GA to predict bankruptcy on a sample of companies listed on TSE	The results showed that GA correctly predicted the bankruptcy of companies two years before the base year, one year before the base year and the base year.
Gaspar-Cunha, Recio, Costa,	2014	They applied a multi-objective evolutionary algorithm,	The experimental results proved the utility of using

Authors	Year	Method	Findings
and Estébanez		specifically the reduced Pareto Set Genetic Algorithm (RPSGA) on four datasets; Industrial French Companies' Data, from the years 2005 and 2006, German Credit Data and Australian Credit Data, both publicly accessible at the UCI Machine Learning Repository.	the self-adaptation of the classifier.
Poorzamani and Nooreddin	2013	A comparison of neural network patterns (ANNs) and principal component analysis + Non-Linear Genetic Algorithm (PCA+Non-Lin) in predicting financial distress.	The ANNs showed a classification of the firms in training, hold-out, and total sample into financially healthy and distressed firms with a general accuracy of 100%, 95.83% and 99.19%, respectively, in the training, hold-out and total sample, while the PCA+Non-Lin showed a classification of the firms in training, hold-out and total samples into two groups of financially distressed and healthy firms with a general accuracy of 89%, 79.17%, and 87.10%, in the training, hold-out and total sample.
Salehi and Rostami	2013	A comparison of Support Vector Machine (SVM) and Genetic Algorithm (GA) and the accuracy of both in bankruptcy prediction.	GA had higher accuracy of prediction and smaller type II error in three years t, t-1 and t-2. In the second stage, GA and SVM are compared. In year's t and t-1, SVM outperformed GA, and its type I and II errors are less. However, GA outperformed SVM in year t-2, and the type I error of GA is higher.
Kim and Kang	2012	They proposed a genetic algorithm-based coverage optimization technique to resolve multicollinearity problems.	The results indicate that the proposed coverage optimization algorithm can help to design a diverse and highly accurate

Authors	Year	Method	Findings
			classification system.
Jeong, Min, and Kim	2012	They applied a generalized additive model (GAM) for input variable selection. Grid search method and genetic algorithm are sequentially implemented to fine-tune the number of hidden nodes and the value of the weight decay parameters.	The empirical results showed that the tuned neural network model significantly outperforms other models (such as case-based reasoning, decision tree, the GAM, the generalized linear model, the multivariate discriminant analysis, and the support vector machine).
Zhang and Wu	2011	They proposed a novel method based on wrapper-based feature selection and used a novel genetic ant colony algorithm (GACA) as the search method, and the rule-based model was employed as the classifier. Stratified K-fold cross-validation method was taken as the statistical resampling to reduce overfitting. Simulations take 1,000 runs of each algorithm on the dataset of 800 corporations during the period 2006-2008.	The results of the training subset show that the GACA obtains 84.3% success rate, while GA obtains only 48.8% and ACA obtains a 22.1% success rate. The results on test subset demonstrate that the mean misclassification error of GACA is only 7.79%, less than those of GA (19.31%) and ACA (23.89%). The average computation time of GACA is only 0.564s compared to the GA (1.203s) and ACA (1.109s).
Martin, Madhusudhnan, Lakshmi, and Venkatesan	2011	Used genetic algorithm to find the non-linear relationship between financial ratios which have more impact in three bankruptcy models. The three bankruptcy models are Altman, Edmister and Deakin model.	The Altman model had best result, with a threshold value of 98%.
Garkaz and Abdollahi	2010	They employed GA in predicting bankruptcy in Iran.	The results showed that GA can be used to predict bankruptcy in Iran.
Galveo, Becerra, and Abou-Seada	2002	They used financial data from 29 failed and 31 non-failed British corporations from the period 1997 to 2000.	The model based on ratios selected by the GA performed well.

Authors	Year	Method	Findings
Shin and Lee	2002	Proposed a GA approach that can be applied to bankruptcy prediction modelling.	The preliminary results showed that the rule extraction approach using GAs for bankruptcy prediction modelling is effective.
McKee and Lensberg	2002	Developed a hybrid model using genetic programming algorithm with variables from a rough sets model derived in prior research to construct a bankruptcy prediction model.	The model had an accuracy of 80% on the validation sample when compared to the original rough sets model which was 67% accurate.
Nanda and Pendharkar	2001	They developed GA which incorporates asymmetric Type I and Type II error costs. The model was compared with linear discriminant analysis (LDA), a goal programming approach, and a GA-based classification approach.	The results showed that the proposed approach, incorporating Type I and Type II error costs, results in lower misclassification costs when compared to LDA and GA approaches that do not incorporate misclassification costs.
Varetto	1998	He compared Linear Discriminant Analysis (LDA) and Genetic Algorithm (GA).	The experiments showed GA to be a very effective instrument for insolvency diagnosis.
Back, Laitinen, Sere, and van Wezel	1996	They compared three alternative techniques-linear discriminant analysis, logit analysis and genetic algorithms that can be used to select predictors for neural networks in failure prediction.	The best prediction results were achieved using genetic algorithms.

Source: Empirical Literature Reviewed, 2019

3.1 Methodology

The study followed a quantitative approach and utilised the ex post facto research design. According to Kerlinger and Rint (1986) in the context of social science research, an 'ex-post facto' investigation seeks to reveal possible relationships by observing an existing condition or state of affairs and searching back in time for plausible contributing factors.

3.2 Sample Size

The final sample comprised of sixty-six (66) companies selected via purposive sampling technique; the decision was premised on the classification of the firms as manufacturing (based on the nature and description of activities) as shown on the Nigerian Stock Exchange (NSE) website. The number of firms classified by sectors included in the final sample is shown in table 1 below:

Table 1: Distribution of companies by sector

S/No	Sector	Number of firms
1	Agriculture	5
2	Consumer Goods	22
3	Conglomerates	6
4	Health Care	11
5	ICT	7
6	Industrial Goods	15
	Total	66

Source: The Nigerian Stock Exchange Website (2019)

3.3 Sources of Data

The data utilised for the study were drawn from secondary sources. The sources included the (1) annual financial reports and accounts of the individual companies downloaded from the websites of the companies and (2) the Nigerian Stock Exchange (NSE) Fact Book. The Statement of Financial Position provided information on assets and liabilities; the Statement of Comprehensive Income provided information on revenue and expenses; and the Statement of Cash Flows provided information on Operating, Investing and Financing Activities.

3.4 Methods of Data Analysis

3.4.1 Predictor Variables

The common approach in bankruptcy prediction studies is to review the literature and identify a large set of potential predictive financial and/or non-financial variables. The study applied a two-stage procedure for variable selection: first, 47 variables were selected from the literature. The selected variables were computed using information obtained from the annual reports of the companies. Secondly, the variables were subjected to an Exploratory Factor Analysis using Principal Component Analysis (PCA). This technique reduces the number of random variables under consideration (Davalos, Leng, Feroz, & Cao, 2009). EFA is used to gather information (explore) the interrelationships among a set of variables (Pallant, 2007). The EFA technique employed is the Principal Component Analysis (PCA). PCA decomposes a given data into a set of linear components within the data. It indicates how a variable contributes to that component, with all of the variances in the variables being used (Dunteman, 1989). The selected financial variables identified in the first stage, with their labels are shown in table 2 below:

Table 2: Financial ratios utilised in model development

Category	Ratio	Label
Index Activity	Net sales / Average net assets	R1
	Net sales / Average total fixed assets	R2
	Net sales / Average equity	R3
Index Cash flow	Cash Flow from Operations (CFO) / Sales	R4
	Cash Flow from Operations (CFO) / Total Assets	R5
	Cash Flow from Operations (CFO) / Current Liabilities or Cash Flow from Operations (CFO) – Dividends Paid / Current Liabilities	R6
	Cash Flow from Operations (CFO) / Long Term Debt or Cash Flow from Operations (CFO) – Dividends Paid / Long Term Debt	R7
	(CFO + Interest Paid + Taxes Paid) / Interest Paid	R8
	Cash Flow from Operations (CFO) / (CFO + Cash from <i>Investing Inflows</i> + Cash from <i>Financing Inflows</i>)	R9
	Cash from Financing / Cash Flow from Operations (CFO)	R10
	Financial Debt/Cash Flow	R11
Index Growth/Efficiency	Total sales / Shareholders funds	R12
	Total Sales/Total Assets	R13
	Operating cash flow / Total assets	R14
	Operating cash flow / Total sales	R15
	EBIT/Total Sales	R16
	Value Added/Total Sales	R17
	Retention rate of earning reinvested (RR) x Return on Equity (ROE)	R18
	Dividends declared / Operating income after taxes	R19
	Retained earnings / Total assets	R20
Index Liquidity/Solvency	Current assets / Current liabilities	R21
	Current assets / Total assets	R22
	Current liabilities / Total assets	R23
	(Current assets – Inventory) / Current liabilities	R24
	(Current assets – Inventory) / Total assets	R25
	Net annual sales / Average receivables	R26
	Cost of goods sold / Average trade payables	R27
Index Leverage	Total liabilities / Total assets	R28
	Total liabilities / Shareholders' equity	R29
	Long Term Debt/Total Assets	R30
	Long Term Debt/Shareholder Funds	R31
	Shareholder Funds/Total Assets	R32
	Net Op. Work. Capital/Total Assets	R33
Index Profitability	Net profit / Total assets	R34
	Net profit / Equity	R35
	Gross profit / Net sales	R36

Category	Ratio	Label
	Net profit / Net sales	R37
	Profit before Tax/Shareholder Funds	R38
	EBIT/Total Assets	R39
Index Rotation	Current assets / Total sales	R40
	Net op. working capital / Total sales	R41
	Accounts receivable / Total sales	R42
	Accounts payable / Total sales	R43
	Inventory / Total sales	R44
	Shareholders' equity / Total assets	R45
	Market Value of Equity/Book Value of Liability	R46
Index Contribution	Financial Expenses/Total Sales	R47

Source: Adnan Aziz and Dar (2006); Altman (1968); Bellovary, Giacomino, and Akers (2007); Etemadi, Rostamy, and Dehkordi (2009); Min (2016a,b,c)

Table 4: Corporate governance variables

Board Size	This is measured as the total number of directors sitting on the board as at the financial year end.	CG1
Board Ownership	This is measured as the proportion of shares held by the board of directors, i.e., $\frac{\text{Capital Held by Board of Directors}}{\text{Total Capital}}$	CG2
Board Structure	This is measured as the number of sub-committees present within the board as at financial year end.	CG3
Proportion of Women on the Board	This is measured as the number of women sitting on the board as at the financial year end, i.e., $\frac{\text{No. of Women on Board of Directors}}{\text{No. of Directors}}$	CG4
CEO Duality	CEO duality occurs when the Chief Executive Officer (CEO) also holds the position of Chairman of Board at the same time.	CG5
Proportion of Non-Executive Directors	This is measured as the number of non-executive directors sitting on the board as at the financial year-end, i.e., $\frac{\text{No. of Non-Executive Directors on Board}}{\text{No. of Directors}}$	CG6

Source: Darrat, Gray, Park, and Wu (2016); Chen and Wu (2016); Brédart (2014b); De Kluyver (2009); Jackling and Johl (2009); Fich and Slezak (2008); Rose (2007); Carter, Simkins, and Simpson (2003).

3.5 Error Rates

Three types of *error rates* are usually estimated in bankruptcy prediction, to examine the accuracy of a prediction model: Type I Error Rate, Type II Error Rate, and Total Error Rate (Chen & Du, 2009). Type I errors are the misclassification of bankrupt firms as non-bankrupt. Type II errors are the reverse-non-bankrupt firms misclassified as bankrupt firms. It is generally agreed upon that Type I errors are more costly than Type II errors for several reasons including loss of business (audit clients), damage to a firm's reputation, and potential lawsuits/court costs (Koh, 1987). The table shows the relationship among these three error rate types. The formula for each error rate is listed as follows:

$$\text{Type I Error Rate} = \frac{Y_2}{Y_3}$$

$$\text{Type II Error Rate} = \frac{Y_4}{Y_6}$$

$$\text{Total Error Rate} = \frac{(Y_2 + Y_4)}{Y_9}$$

Table 5: Relationship between Type I, II, & Total Error Rates

		Prediction		
		Normal	Bankruptcy	Sum
	Normal	Y ₁	Y ₂	Y ₃
Actually	Bankruptcy	Y ₄	Y ₅	Y ₆
	Sum	Y ₇	Y ₈	Y ₉

Source: Chen, W. S., & Du, Y. K. (2009). Using neural networks and data mining techniques for the financial distress prediction model. *Expert systems with applications*, 36(2), 4075-4086.

4.0 Data Analysis and Results

Table 6: KMO and Bartlett's Test of Sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.666
Bartlett's Test of Sphericity	Approx. Chi-Square	2532.055
	Df	595
	Sig.	.000

Source: SPSS Ver. 24

The KMO index value is 66.6%; therefore the sample size of the data set in this study is adequate for use in factor analysis. In addition, Bartlett's Test of Sphericity signifies whether the R-matrix is an identity matrix, i.e., whether the population correlation matrix resembles an identity matrix (Delen, Kuzey, & Uyar, 2013). If there is an identity matrix, every variable correlates poorly with all the other variables, which means correlation coefficients are close to zero, leaving them perfectly independent from each other. It should be significant at $p < 0.05$; the value obtained is highly significant at $p < 0.01$. This result indicated that the correlation coefficient matrix is not an identity matrix. PCA determines which vector is significant in the data set (Delen, Kuzey, & Uyar, 2013). The first principal component has the highest degree of variance; the second principal

component has the second-highest degree of variance, and so forth (Kantardzic, 2003).

The results showed that the first sixteen factors explained a relatively large amount of variance (Cumulative 83.996%); SPSS by default extracted all factors with eigenvalues greater than 1. The eigenvalue of a factor represents the amount of the total variance explained by that factor (Pallant, 2007). PCA with varimax orthogonal rotation was carried out to assess the underlying dimensions of the provided items for financial ratios (Delen, Kuzey, & Uyar, 2013). The rotation method used was Varimax with Kaiser Normalization:

1. **Factor 1:** The first factor was the most significant, explaining 15.954% of the total variance. Nine ratios: R5, R14, R45, R32, R47, R4, R15, R16, and R39 were loaded under this factor. The loaded variables were all positive, having high factor loadings values of 0.969, 0.969, 0.952, 0.952, 0.866, 0.803, 0.803, 0.739 and 0.660 respectively.
2. **Factor 2:** The second factor was significant, explaining 9.241% of the total variance. Four ratios: R29, R35, R38, and R12 were loaded under this factor. The loaded variables were all positive, having high factor loadings values of 0.996, 0.990, 0.981, and 0.960 respectively.
3. **Factor 3:** The third factor was significant, explaining 8.576% of the total variance. Four ratios: R3, R2, R1, and R26 were loaded under this factor. The loaded variables were all positive, having high factor loadings values of 0.948, 0.942, 0.936, and 0.739 respectively.
4. **Factor 4:** The fourth factor was significant, explaining 7.683% of the total variance. Three ratios: R25, R33, and R41 were loaded under this factor. The loaded variables were all positive, having high factor loadings values of 0.942, 0.942, and 0.873 respectively.
5. **Factor 5:** The fifth factor was significant, explaining 5.144% of the total variance. Four ratios: R28, R30, R23, and R22 were loaded under this factor. The loaded variables were all positive, having high factor loadings values of 0.958, 0.940, 0.524, and 0.561 respectively.
6. **Factor 6:** The sixth factor was significant, explaining 4.790% of the total variance. Three ratios: R26, R27, and R46 were loaded under this factor. The loaded variables were all positive, having high factor loadings values of 0.582, 0.958, and 0.915 respectively.
7. **Factor 7:** The seventh factor was significant, explaining 4.334% of the total variance. Four ratios: R39, R34, R23, and R22 were loaded under this factor. The loaded variables were all positive, having high factor loadings values of 0.549, 0.771, 0.668, and 0.636 respectively.
8. **Factor 8:** The eighth factor was significant, explaining 4.189% of the total variance. Two ratios: R17 and R36 were loaded under this factor. The loaded variables were all positive, having high factor loadings values of 0.989 and 0.989 respectively.
9. **Factor 9:** The ninth factor was significant, explaining 3.956% of the total variance. Two ratios: R40 and R44 were loaded under this factor. The loaded variables were all positive, having high factor loadings values of 0.985 and 0.985 respectively.
10. **Factor 10:** The tenth factor was significant, explaining 3.752% of the total variance. Two ratios: R21 and R24 were loaded under this factor. The loaded variables were all positive, having high factor loadings values of 0.994 and 0.993 respectively.

11. **Factor 11:** The eleventh factor was significant, explaining 3.272% of the total variance. Two ratios: R9 and R11 were loaded under this factor. The loaded variables were all positive, having high factor loadings values of 0.996 and 0.996 respectively.
12. **Factor 12:** The twelfth factor was significant, explaining 3.056% of the total variance. Two ratios: R13 and R20 were loaded under this factor. The loaded variables were all positive, having high factor loadings values of 0.916 and 0.906 respectively.
13. **Factor 13:** The thirteenth factor was significant, explaining 2.776% of the total variance. Two ratios: R19 and R18 were loaded under this factor. The loaded variables were all positive, having high factor loadings values of 0.841 and 0.830 respectively.
14. **Factor 14:** The fourteenth factor was significant, explaining 2.523% of the total variance. One ratio: R43 was loaded under this factor. The loaded variable was positive, having a high factor loadings value of 0.931 respectively.
15. **Factor 15:** The fifteenth factor was significant, explaining 2.388% of the total variance. Two ratios: R16 and R37 were loaded under this factor. The loaded variables were all positive, having high factor loadings values of 0.589 and 0.908 respectively.
16. **Factor 16:** The sixteenth factor was significant, explaining 2.360% of the total variance. Three ratios: R7, R8, and R6 were loaded under this factor. The loaded variables were all positive, having high factor loadings values of 0.736, 0.585, and 0.532 respectively.

4.1 Test of Hypotheses

- H₁: There is a significant difference in the predictive accuracy of GA compared with neural network using in the prediction of corporate bankruptcy
- H₂: The predictive accuracy of the GA model can be improved from inclusion of corporate governance variables.

The percentage of incorrect predictions at the training phase was 6.8%; while that at the testing phase was 10.5% [The neural network partitioned the data between (70.0%) training and (30.0%) testing].

Table 7: Independent variable importance

	Importance	Normalized Importance
R5	.028	9.4%
R14	.096	32.5%
R16	.076	25.6%
R22	.059	20.0%
R23	.028	9.4%
R25	.041	13.7%
R28	.034	11.6%
R32	.036	12.0%
R34	.297	100.0%
R39	.116	39.0%
R45	.158	53.1%
R47	.031	10.4%

Source: SPSS Ver. 24.

The table shows the importance and normalized importance of each factor in the neural network model; R34 (100%) had the largest normalized importance, following this was R45 with normalized importance of 53.1%. R39 and R34 had normalized importance of 39.0% and 32.5% respectively. The table below provides information on the neural network model developed with the addition of corporate governance variables. The percentage of incorrect predictions at the training phase was 4.3%; while that at the testing phase was 5.6% [The neural network partitioned the data between (70.0%) training and (30.0%) testing].

Table 8: Independent variable importance

	Importance	Normalized Importance
Board size	.039	21.7%
BC	.036	20.0%
Ceo Duality	.022	12.1%
BO	.040	22.5%
PNED	.047	26.3%
PWD	.027	15.2%
R5	.056	31.1%
R14	.044	24.6%
R16	.094	52.8%
R22	.052	29.0%
R23	.044	24.5%
R25	.067	37.4%
R28	.030	16.7%
R32	.097	54.4%
R34	.179	100.0%
R39	.036	20.1%
R45	.051	28.4%
R47	.040	22.5%

Source: SPSS Ver. 24.

The table shows the importance and normalized importance of each factor in the neural network model; R34 (100%) had the largest normalized importance, next was R32 with a normalized importance of 54.4%. Following this was R16 with a value of of 52.8% and R25 with a normalized importance value of 37.4%.

Table 9: Comparison of neural network and genetic algorithm model

	Model	Model + Corporate Governance
Neural network [training]	94.4%	95.7%
Neural network [testing]	92.2%	94.4%
Genetic algorithm	96.94%	97.85%

Source: RapidMiner Studio Version 7.6; SPSS Ver. 24.

The Genetic Algorithm was developed with the aid of RapidMiner Studio Version 7.6. The parameters of the operators are described below:

Table 10: Parameters of the GA Operator

Optimize by generation (YAGGA)	
Maximal fitness:	Infinity
Population size:	5
Maximum number:	30
Tournament size:	0.25
Start temperature:	1.0
p initialize:	0.5
p cross over:	0.5
The operator used the heuristic mutation probability	
Cross validation	
Number of folds:	5
Sampling type:	automatic
Gradient Boosted Tress	
Number of trees:	20
Maximal depth:	5
Min rows:	10
Min split improvement:	0
Number of bins:	20
Learning rate:	0.1
Sample rate:	1.0

Source: RapidMiner Studio Version 7.6

Note: Many selection schemes are available for GAs, each with different characteristics. An ideal selection scheme would be, simple to code, and efficient for both nonparallel and parallel architectures. Furthermore, a selection scheme should be able to adjust its selection pressure to tune its performance for different domains. Tournament selection is increasingly being used as a GA selection scheme because it satisfies all of the above criteria, and is therefore used in the study.

Table 11: Result of Genetic Algorithm Model

accuracy:	96.94% +/- 2.70%	(mikro: 96.94%)
classification_error:	3.06% +/- 2.70%	(mikro: 3.06%)
spearman_rho:	0.627 +/- 0.124	(mikro: 3.135)
kendall_tau:	0.627 +/- 0.124	(mikro: 3.135)
absolute_error:	0.160 +/- 0.019	(mikro: 0.160 +/- 0.220)
relative_error:	16.04% +/- 1.88%	(mikro: 16.04% +/- 22.03%)
relative_error_lenient:	16.04% +/- 1.88%	(mikro: 16.04% +/- 22.03%)
relative_error_strict:	61.72% +/- 25.08%	(mikro: 61.76% +/- 255.95%)
normalized_absolute_error:	0.185 +/- 0.023	(mikro: 0.185)
root_mean_squared_error:	0.271 +/- 0.024	(mikro: 0.273 +/- 0.000)
root_relative_squared_error:	0.313 +/- 0.029	(mikro: 0.314)
squared_error:	0.074 +/- 0.013	(mikro: 0.074 +/- 0.171)
correlation:	0.627 +/- 0.124	(mikro: 0.627)
squared_correlation:	0.409 +/- 0.139	(mikro: 0.393)
cross-entropy:	0.354 +/- 0.061	(mikro: 0.354)
margin:	0.056 +/- 0.017	(mikro: 0.056)
soft_margin_loss:	0.160 +/- 0.019	(mikro: 0.160)
logistic_loss:	0.364 +/- 0.007	(mikro: 0.364)

Model with corporate governance

accuracy	97.85% +/- 2.48%	(mikro: 97.85%)
classification_error:	2.15% +/- 2.48%	(mikro: 2.15%)

Source: RapidMiner Studio Version 7.6

The table above showed that the GA model had an accuracy of 96.94%; and a classification error of 3.06% before the inclusion of corporate governance variables; thereafter the classification accuracy slightly rose to 97.85%; and a classification error of 2.15% after the inclusion of corporate governance variables, the null hypothesis is therefore rejected and the alternate accepted. That the “predictive accuracy of the GA model can be improved from the inclusion of corporate governance variables”.

4.2 Discussion of Findings

Studies have used parametric procedures to establish the statistical significance of ratios between bankrupt and non-bankrupt firms. This study employed the t statistics to check for statistically significant differences between the ratios. Studies mainly focus on measures of central tendencies, such as the mean, median. Welc (2017) in Poland compared the statistical significance of differences between medians of bankrupt and non-bankrupt firms. In contrast, Slefendorfas (2016) employed correlation and Mann – Whitney U test to select input data.

This study found the following ratios significant in explaining bankrupt and non-bankrupt firms: R5 (Cash Flow from Operations (CFO) / Total Assets); R8 ((CFO + Interest Paid + Taxes Paid) / Interest Paid); R14 (Operating cash flow / Total assets); R16 (EBIT/Total Sales); R17 (Value Added/Total Sales); R22 (Current assets / Total assets); R23 (Current liabilities / Total assets); R25 ((Current assets – Inventory) / Total assets); R28 (Total liabilities / Total assets); R32 (Shareholder Funds/Total Assets); R34 (Net profit / Total assets); R36 (Gross profit / Net sales); R37 (Net profit / Net sales); R38 (Profit before Tax/Shareholder Funds); R39 (EBIT/Total Assets);

R45 (Shareholders' equity / Total assets); and R47 (Financial Expenses/Total Sales); thus, 2 cash flow ratios, 3 growth ratios, 3 liquidity ratios, 2 leverage ratios, 5 profitability ratios, 1 for rotation and 1 for index contribution. Thus the profitability ratios were more sensitive to financial distress than any other ratio. Also, of worth mentioning are the liquidity and growth ratios which also had 3 ratios each that were sensitive for each category.

Similarly, studies have shown the dominance of profitability ratios in assessing corporate bankruptcy. For instance, Brédart (2014a) on a sample of U.S. firms showed that profitability, liquidity and solvency were all significant in assessing financial distress probability. In Slovakia, Mihalovič (2016) showed that the most significant predictors were net income to total assets, current ratio and current liabilities to total assets. Ahmadi, Soleimani, Vaghfi, and Salimi (2012) on a sample of firms in Iran showed that variables of net profit to total assets ratio, ratio of retained earnings to total assets and debt ratio were more powerful in bankruptcy prediction. Also, Hassani and Parsadmehr (2012) on a sample of firms in Iran found that variables of debt to equity ratio, net profit to net sales ratio and working capital to assets as significant. Zhou and Elhag (2007) showed that bankrupt firms had lower profitability before failure and a significant difference in operating efficiency ratio. Islam, Semeen, and Farah (2013) on a sample of firms in Bangladesh reported that liquidity ratios ranked first before profitability ratios.

Studies that were done in the banking sector also show similar results. For instance, Yahaya, Nasiru, and Ebgejiogu (2017) in Nigeria found that failed companies were less profitable, less liquid and had lower asset quality. However, the study by Lundqvist and Strand (2013) showed that the predictive ability of ratios varies between years; and in some instances, significant differences between industries occur. The classification of firms was done using Altman's Z score model, this is in line with studies that confirm its efficacy. Recently the study by Babatunde, Akeju, and Malomo (2017) on a sample of manufacturing firms in Nigeria, proved that the Z-score model was capable of identifying companies with deteriorating performance. Similarly, Unegbu and Adefila (2013) found that the predictive ability of the Z score model is very strong for manufacturing firms. In China, Wang and Campbell (2010) showed that Altman's model has higher prediction accuracy for predicting failed firms. While another recent study by Nwidobie (2017), established the suitability of Altman's Z score model for the banking industry. The Genetic Algorithm model was developed using a Boosting Ensemble, Gradient Boosted Decision Trees, in contrast, the study by Davalos, Leng, Feroz, and Cao (2009) used bagging to improve the model's generalisation accuracy and to develop a doubly controlled fitness function to guide the operations of the (GA) method.

The *first hypothesis* showed that the neural network (MLP) had an accuracy of 94.4% and 95.7% when corporate governance variables were added. Thus, the neural network model outperformed both the logit and discriminant models. In India, the study by Bapat and Nagale (2014) which compared the performance of multiple discriminant analysis, logistic regression and neural network proved that neural network had the highest classification accuracy when compared with multiple discriminant analysis and logistic regression. Another study, by Eriki and Udegbumam (2013) in Nigeria, which compared the performance of neural network and multiple discriminant analysis, showed that neural network outperformed discriminant analysis technique for corporate distress prediction. Yahaya, Nasiru, and Ebgejiogu (2017) using a feed-forward back

propagation neural network showed an accuracy of approximately 89 percent. Chen and Du (2009) applied the backpropagation neural network and K-Means clustering algorithm for bankruptcy prediction in Taiwan. The results showed that the accuracy rate (non-factor analysis) with the BPN model is better than the clustering model. Kouki and Elkhaldi (2011) compared the performance of multivariate discriminate analysis, logit model and neural network on a sample of Tunisian firms and found that neural network is the most powerful at a very short term horizon. As the firm approaches bankruptcy neural networks were more likely to detect. The study also showed that multivariate discriminate analysis and logit regression were also effective at a medium horizon of two and three years before the bankruptcy. In Taiwan, Cheng, Chen, and Fu (2006) compared the neural network model with logit analysis showed that the radial basis function network outperformed the logit model. The study by Lin (2009) observed that if the data does not satisfy the assumptions of the statistical approach, then artificial neural networks achieve higher prediction accuracy. Multilayer Perceptron (MLP) neural network has been used also in prior studies and proved effective. For instance, Farinde (2013) applied MLP neural network for Nigeria banks and found that it had a significant predictive ability in distress prediction of Nigerian banks. In contrast, the study by Tseng and Hu (2010) which compared the performance of four models, logit, quadratic interval logit, neural and fuzzy neural reported that the Radial Basis Function neural network outperformed the other models.

The *second hypothesis* showed that the predictive accuracy of the GA model can be improved from the inclusion of corporate governance variables. The GA model had an accuracy of 96.94%, and a classification error of 3.06% before the inclusion of corporate governance variables; thereafter the classification accuracy slightly rose to 97.85%; and a classification error of 2.15% after the inclusion of corporate governance variables. More so, GA was efficient in determining the best set of predictors for corporate bankruptcy. Hajiamiri, Shahraki, and Barakati (2014) found that GA is highly effective in predicting financial bankruptcy, to the extent it managed to correctly predict the financial bankruptcy of companies two years before the base year, one year before the base year and the base year at accuracies of 96.44, 97.94 and 95.53, respectively. The proposed model by Abdelwahed and Amir (2005) the EBM (Evolutionary Bankruptcy Model) based on genetic algorithms and artificial neural networks showed that the EBM can select the best set of predictive variables, then, search for the best neural network classifier and improve classification and generalization accuracies. This is in line with Varetto (1998) who identified GA as an effective instrument for insolvency diagnosis. In summary, the study established a significant difference in the predictive accuracy of the genetic algorithm compared with the neural network model in bankruptcy prediction. The techniques have different assumptions about the relationships between the independent variables (Back, Laitinen, & Sere, 1996a,b).

5.1 Conclusion and Recommendations

The study concludes that GA outperforms the Neural Network models for bankruptcy prediction of Nigerian manufacturing firms. The literature has identified an abundance of techniques following studies by Beaver and Altman; however, these models differ in their predictive accuracy. More recently, machine learning techniques such as Support Vector Machines (SVM), Neural Networks (NN), Genetic Algorithm (GA), among others have been employed and their predictive accuracy established in several studies. The inclusion of corporate governance variables slightly improved the accuracy of the GA model. The overall performance of the hybrid model was found by informed integration of tools (Alaka et al., 2018). Few studies

have dealt with the integration of GA and Decision Trees. The Genetic Algorithm model was integrated with an ensemble method, namely boosting. Boosting adaptively changes the training set based on the accuracy of the previous classifiers. Boosting concentrates on the instances misclassified by the previous classifier. Based on these, the study recommends the following that the deployment of GA in determining the best set of predictors: GA has demonstrated its efficacy in determining the best set of predictors, the study, therefore, recommends that future models for particular industries could be built using GA. And, the use of an alternative model in benchmarking performance and accuracy.

Notably, a difference was found in the predictive accuracy of the models employed in the study. However, authors have suggested that the use of existing models is limited by the conditions in which they are developed (Zelenkov, Fedorova, & Chekrizov, 2017). Therefore the development context of the GA model may limit its applicability to other sectors, more so the use of GA with different classification models would produce varying results.

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RELEVANCE OF ACCOUNTING THEORY IN THE DEVELOPMENT OF GENERAL TENETS OF ACCOUNTING

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ABSTRACT

This paper assessed the relevance of accounting theory in the advancement of general tenets of accounting. Based on the study, accounting theorists concur that no broad theory of accounting has been advanced yet to create sufficient accounting tenets. This paper is to recognize the accounting tenets as not only the outcome of academic research but recent accounting practice via its standard-setting process, contributes greatly to the advancement of accounting tenets. Therefore, accounting theory and research try to create the accounting tenet which is pivotal in academic debate. The explanation in the paper is based on the normative, descriptive, and positive propositions to the advancement of accounting theory, decision-useful theory of accounting as well as interpretative accounting. Based on the aforementioned advancements of accounting theories, they are advantageous to account as a result of different accounting research propositions that will jointly enhance the level of accounting research and conceivably accounting theory. The position that these developments fulfil in establishing suitable accounting tenets, however, is still up for discussion and a thing of concern.

Keywords: Accounting theory, Development, General tenets, Propositions, Professionals

Introduction

The creation of rail lines and approval of the first Companies Act in England in the early 19th century gave birth to recent states for the advancement of accounting professions and institutions in England and the United State of America. However, the position of the professional accounting bodies at first stages was mostly limited to provide ad hoc solutions to the recent accounting problems, or at best they attempted to “theorize” accounting by compiling existent best accounting practices. In general, they not prepare to build a methodical theory of accounting while the ad hoc propositions to the recent problems facilitated some progress, especially in terms of precise technical problem areas, not adequate basic theory rising made the position of accounting untenable. The need for a basic theory as a frame of reference for the subject or as a logical set of concepts describing and guiding the accounting practitioners action by identifying, measuring, and communicating economic information was being increasingly felt (Scott,2006)

However, it was before the 1930s that accounting advancement focused on the require for a methodical advancement of theories and the propositions to accounting that commenced to take form during this period attempted to create basic postulates and tenets, widen the basis of accounting by associating to those basic disciplines such as economics, behavioural science, and measurement theory, formalize accounting theory into a more abstract shape and created conceptual underpinning for accounting.

The force of the recent advances in the area of accounting came mostly from the research efforts of the leading professional accounting bodies and the contribution of accounting literature. International Accounting Standards Board is committed to creating fundamental-based accounting standards (IASB 2008). The main question is whether the fundamental accounting tenets are adequately good enough to allow suitable accounting standards while another question is whether the advancement of accounting theory can accommodate the general tenets of accounting.

The theory is usually created and rediscover using of the process of research (Wolk, Dodd & Rozycki, 2008). Therefore a suitable question needs to think of whether the tenets of accounting are adequately created and rediscover in a research procedures. Therefore, it should be to recognize as a fact that accounting tenets are not only advanced using of accounting research but practically, employing of the standard-setting procedure that is currently a key driver of the creating tenets of accounting. The position of accounting research in advances accounting tenets and notifying the standard setters' process is a germane to academic question (Coetsee, 2010). Accounting theory statement and theory that accepted by Associations showed the level of accounting research and practicable at that period, and given the distinct methods of measurements in the accounting system, it was hard for accounting practitioner to advance only one method of measurements in the accounting system as pointed out by the American Accounting Association in 1973 (Wolk *et al.* 2008). It was viewed by (Watts and Zimmermann, 1979) that no widely accepted accounting theory to determine accounting standards and oppose its impossibility whereas Belkaoui (2014) affirms that no broadly accounting theory influenced the advances in theory and those distinct theories derived from different propositions to the building of accounting theory. As a result of no broad theory influenced the advances in accounting theory, the question now is, on what grounds theoretical tenets of accounting are created? The question is hard to ask with diverse solutions.

Predicated on the above issues, the researchers examined the following objectives thus: (i) the nature and advancement in Accounting theories, (ii) examined the major advancements on accounting theory across positive theory of accounting, decision-usefulness accounting theory and accounting interpretation theory.

Review of Related Literature

Conceptual Review

Accounting theory is defined as logical reasoning in the shape of a set of broad tenets that furnish a general frame of reference by which accounting practice can be assessed and guide the advance of recent practices and procedures (Hendriksen,1992). In addition, accounting theory employs elaborate existent practices to demand a better understanding of them. However, the main objective of accounting theory is to furnish a coherent set of logical tenets that shape the whole frame of reference for the evaluation and advances in good accounting practices (Hendriksen,1992). Accounting is seen as the business language to communicate the periodical financial disclosures to minimized the information asymmetry, even though such information may be good or bad, subjective or not complete but still important to the interested people (Jordan & Messner, 2012, Andon, Baxter, & Chua, 2014; Boedker & Chua, 2013). Accounting theory comprises basic propositions, definitions, tenets and concepts and how they are derived and it is used to elaborate existing practices and procedures to acquire better knowledge in areas of diversities among users of financial reports (Dodd & Ruzycki, 2008) American Association(1996) ,AICPA(1970) and Anao, (1996) defined accounting theories as a cohesive set of a conceptual, hypothetical and practical assumption that elaborating and guiding the practitioners' actions in identifying, analysing, measuring, interpreting and communicating economic data to the users of annual report and accounts. In aggregate, we can deduce that, accounting theory is a set of ideas that are widely accepted as a description of the practices of accounting (Ram & Tapria, 2019). Based on this, the practice of accounting cannot become to reality without an adequate theoretical background because theories are derived from constant observation, examination of problems, and procedures theoretically. Hence, theories are now considered to be a backbone of accounting. (Osho & Adebambo,2018)

Characteristics of Accounting Theory

The following are the characteristics as highlighted by (Ram & Tapria, 2019)

- i) Accounting theory serves the double position of originating and elaborating accounting practices. Currently, problems in practice serve as fundamental to the advance of recent theories and at the same time, it elaborates the reason behind the existent practices
- ii) Sound accounting theory furnishes logical support to practices of accounting that will not only be regarded as general tenets to be referred for appraising and guiding the existent practices of accounting but also creating the recent practices as providing an answer to a different environmental challenges
- iii) No theory will be accepted globally until it has any of several philosophical theories in it. Therefore, accounting theories have in-built dynamism which enables them to put in place and create accounting practices by metamorphosis business environment
- iv) Accounting theories are verified, tested as well as assessed by the accounting practice to examine the existence of deviation from theory and practice, then deviation in accounting theory is subject to be modified and restated in such a way for emerge of recent phenomena of tenets.
- v) Accounting theories furnish a methodical set of logical postulates of tenets, which are in support to facilitate as based on logical rationale to the existent practices.

The Nature of Accounting Theory and the Advances in Theory

Accounting theory has been examined by distinct schools of thought, the first school focuses on the advances in accounting tenets at the same time narrates accounting theory as a logical rationale behind the form of a set of wide tenets that (i) furnishes a broad frame of reference by which practices of accounting be assessed and (ii) guides the advancement of recent practices and procedures (Hendriksen 1992). Another school of thought describes accounting theory as an activity to elaborate, at the same time predict accounting practice with the main objective to furnish base on the prediction and narration of accounting behaviour and activities (Belkaoui, 2014).

The theory tries to narrate the links and predict ideals or real situations (Wolk *et al.* 2008) whilst the first school determined the tenets of accounting and the second tries to assess the practical aspects of it. The first school upholds that accounting theory employs elaborate existent practices to acquire a better understanding of them as expressed by (Hendriksen ,1992). These two schools thought of the theory of accounting are segmented into two major techniques for the advancement of theory as a whole such as normative and descriptive methodologies. Normative methodology queries the existent theory to explain what it should be whereas descriptive examines the fundamental ideas to explain what they are (Hendriksen 1992; Belkaoui 2014).

The normative methodology of accounting is more prescriptive and has prevailed which primarily determined the recognition of financial transactions and distinct measurement principles of accounting by given attention to how these should be reported (Deegan & Unerman 2006; MacNeal, 1970; Paton & Littleton, 1940). This has two qualities, namely, the attachment of the word and the entity described (Jensen, 1976). By contrast, descriptive narrates, elaborates, and predicts the ideals situation (Deegan & Unerman 2006). The normative and descriptive methodologies are differentiated by the sequencing process to advance theory and normative is a deductive procedure that objectives are formed from which tenets are advanced. The descriptive technique is an inductive procedure that centres on observations of the real situation of the world and mainly focused on the record that underlying ideals (Coetsee, 2010). However, the predictive system is sometimes identified as a third process and is continuing than the inductive which does not only document observations, but elaborates and forecasts them, hence invariably known as a positive research methodology (Deegan & Unerman, 2006).

The second school of thought in accounting theory elaborates and forecasts, despite that descriptive observed the fundamental and predicting the situation which is more positive in nature. The outcome of various accounting theorists does not reflect a distinction between normative and descriptive underlying phenomena as they should be. It is prescriptive as against descriptive theory that narrates and sets out the tenets of what ought to be done. Inanga and Schneider, 2005) shared that normative theories are attributable by the objective of propositions and deduction

Positive theories try to explain real global issues as they occur in the real world. Research and literature on positive theories involve fact and finding observations of the relevant phenomena from which a problem is defined. The positive accounting theory aims of mapping accountants' behaviour with pivot words such as why, where or how has attempted to elaborate the current accounting as demanding whether particular accounting data is important to the interested people, what accounting method is suitable to solve a managerial problem and even has logical for fair value accounting (Inanga & Schneider, 2005; Watts & Zimmerman, 1986; Barth, Beaver, & Landsman, 2001). The critics of positive accounting have argued about its natural science attached methodologies and limited application of generalized positive accounting theories hypotheses due to varying business environment and time (Ball, Robin, & Wu, 2003).

Advancement in Accounting Theory

In the years between 1960s and 1970s, two major advances in accounting occurred and this have a significant influence on the advancement in accounting theory as of now. The normative was firstly move to positive accounting methodology which leads to the thrust of frontline accounting research whereas, second transpire to a decision usefulness accounting. In the years between 1956 and 1970 which serves as the normative period that the values and beliefs for best practices were advanced (Godfrey, Hodgson, Holmes and Tarca 2006) while the normative proposition limited to displayed valid fact and finding of the assumption based on the normative prescriptions. Wolk *et al.* (2008) agreed that the postulated principle proposition was outdated in 1970. The normative proposition has been regarded as non-scientific and reasons why it was not employ based on no certainty concerning the detail of normative theory that would be accepted by accounting researchers (Godfrey *et al.* 2006). The resultant effect transpire from normative to positive accounting research which cantered on accounting research moved from the advance of accounting tenets to more scientific techniques of narrating and predicting the practice of accounting.

Godfrey *et al.* (2006) emphasized that positive accounting theory is at which profession has sought a more normative proposition by seeking theory to harmonize the practice of accounting to more important. However, the question can be raised neither nor the practice is creating theory as this is not a pure normative proposition.

In the 1960s, the second advancement of decision usefulness accounting commenced in which Statement of Basic Accounting Theory was brought out by the American Accounting Association in 1966, and this period serves as base year for the orientation (Hicks 1966). Belkaoui (2014) therefore narrates the position of accounting as to produce data concern the economic activities that come out from a company's activities within its immediate environment. Through the decision-usefulness orientation, the concentration shifted from the tenets of accounting to the accounting procedure in which the information has furnished. Some erudite scholars demanding accounting by providing a comprehensively research base of the social sciences in the last two decades and explain that accounting as a human activity which include all research propositions such as interpretative and behaviour research (Reiter & Williams 2002)

The Positive Accounting Theory

The scholar on research methodologies from social sciences, elaborates positivist support as it is a rejection of metaphysics. It concerns by providing truth through factual means as well as phenomenon position that upholds the aspiration of knowledge in which describe, designs and also to predict the real situation that we experienced. The objective of science is thus what we can observe and measure (Henning, Van Rensburg & Smit, 2004)

The concentration of a positive accounting theory is to provide truth by narrating the reality and its fact and finding tool that gives the research process validity. The descriptive proposition commencing by incorporating based on experienced testing instruments to expand and forecast the real situation of the world, positivism is established. Under this proposition, the theory of accounting is advanced by designing models and testing them. The assumption is never totally the truth, but since it is not rejected through research, therefore, it is the truth. The positive accounting theories also bring together the activities of narrating and predicting and presently, the whole of this theory is concentrates on elaborating the rationale for present practice and predicting the state that accounting and associated data play role for useful decisions making (Godfrey *et al.* 2006).

Positive accounting is an authentic research technique that can be put into practical use in accounting research (Boland & Gordon 1992). Inanga and Schneider (2005) advanced the precise purpose of absence of accounting research to enhance accounting practice. He further said there is a ground-laying error in the accounting research process as stated and there is no theory to deploy

as a referral document on the establishing hypotheses to be experienced in research which serves as the major problem of accounting theory. The non-availability of theory established in both the educational sector and practice as well as a research literature itself and due to training and inadequate knowledge with a research interest tends to non-conduct thorough research outcomes to demand professional needs of practitioners. In other words, accounting research established what looks to be a highly advanced research context that is an environment dominated by obtained globally experienced methodology, instead of theory.

However, for accounting researchers to stand an important position in the advances in accounting tenets, theories based on the fundamental tenets of accounting needs to be regarded as an ingredient of any positive research methodology. Therefore, the insights drawn from such research could be useful to standard setters in understanding the reactions that metamorphosis in accounting tenets may possess. Currently, the major application of positive accounting research does not focus on advance tenets of accounting but paramount as basic accounting researchers perform another opportunity that will have influence on the essence of accounting itself.

Decision Usefulness Theory

Decision usefulness theories concentrate on measuring and appraising the influence of accounting procedures and methods of reporting statement of account to individual and group of interested users of accounting data. The relevance of data communicated is a subjective concept depends on two folds viz, "who are the users of it?" and what are the decision models employed by users of accounting data? (Ram & Tarpria, 2019). Therefore, financial report is summary of report of the financial and non-financial conditions of an organization for a given period usually a year. The present level of decision usefulness and its interpretation should be in line with the set of stakeholders that have largely persisted. The "softer" decision usefulness and stewardship emphasis that will give opportunity for finance providers which dominated standard- setting by the United Kingdom (Laughlin, 2007)

Interpretation of Accounting Theory

Interpretation theories are among other classical accounting theory aimed at giving meaning to accounting practices and tries to fine-tune deviations in interpretations and meaning attached to the information communicated by producers to the users of accounting information as

they say, “It is not what you say but it is what people understand”. The interpretation accounting theory resulting in the rationale behind traditional accounting practice while the contributors of interpretational theories focused on finding the consequences of the accounting practices followed by evaluating them (Paton & Littleton 1940; Sterling, 1975). Interpretational theorists tried to make such theories that would help practitioners of accounting in resolving accounting issues.

Interpretative research is wider than describing and elaborating the positive techniques that underlying the ideals or events being researched and the reasons why they acted in a certain manner. This offers insights into how a given person in a given context, makes sense out of given ideals or events. This is not a theory motivated by setting and testing hypotheses but reports on the theory identified.

The interpretative accounting research attracts practical and political ways of standards setting to create the rationale behind the given advice on the process (Ahrens, Becker, Burns, Chapman, Granlund, Habersam, Hansen, Khalifa, Malmi, Mennicken, Mikes, Panozzo, Piber, M., Quattron, & Scheytt, 2008). This study, therefore, agrees that the nature and intellectual position of interpretative research in accounting must be cleared to create the opportunity for researchers and to investigate the rationale behind accounting practice and thus contribute to existing knowledge. The interpretative research is believed by social practices as well as management accounting, are not too natural real situation but they are socially structured and consequently, they can be transformed by the social actors themselves (Ryan, Scapens, & Theobald, 2002). Hence, the objective of interpretative research is not to transform the social order but to document the data without bias.

Conclusion & Recommendation

This paper assessed the potential relevance that distinct kinds of accounting theory and research tries to develop of accounting tenets. This paper recognizes as a fact that no widely accepted accounting theory exists, that accounting tenets are not only resultant to academic research but present accounting practice via its standard-setting process that contributed immensely to the advancement of accounting tenets. It is paramount to think of the relationship, if any, between the theory of accounting and research as well as the standard-setting process respectively. When considering the ken position that theory of accounting and research play, the

explanation is concentrated on the normative and descriptive proposition to the growth of accounting theory, the positive accounting research, decision usefulness accounting theory, and the position of interpretative accounting research.

Many accounting researchers widely centred their research on the social sciences, because it recognizes the fact that accounting is a social activity. The creation of accounting tenets by the professional bodies is a practical and political procedure based on human interfering. Thus, interpretative research can fulfil a position in creating accounting tenets with concerned theories. All the stated research propositions should beyond the wider social aspects of accounting and it can be employed to assess the tenets of accounting itself. Discussion is required on how interpretative research to be included in the principles of accounting. Based on the aforementioned, the advances in accounting theories are advantageous to accounting because they divide the grip of the positivistic era and give room to accounting up to a different of research propositions that will jointly enhance the level of accounting research and conceivably theory of accounting. However, the aforementioned discussion is whether resulting in the advances in good accounting tenets by way of investigating, or whether the lacuna between the practice of accounting and research will keep on broaden The paper contributes to the existing literature by examine at the relevance of distinct types of theory of accounting and investigate the role play in advancing consistent tenets of accounting. The issue is whether a theory of accounting investigated and also contributed to accounting tenets established by the standard-setters. Limitation in this study was that the researchers fails to discuss grounded theory and relates the interpretive research with critical research accounting. The implication was that the study is not based on the empirical which may be subjective. Further studies needs to be carried out to investigate on the basis of empirical studies.

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