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CENTRAL BANK OF NIGERIA

The Impact of Manufacturing Sector on Economic Growth in Nigeria

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ABSTRACT

This research aims at gaining insight in-to the impact of the manufacturing sector on economic growth in Nigerian. To also highlight the significance and challenges of the Nigerian manufacturing sector. This study also aims to examine the extent of government support in the manufacturing sector and evaluate the impact of technology in the sector.

The method adopted in this research is qualitative research method. It involves interviewing Nigerian manufacturers and government officials.

The manufacturing sector contributes significantly to the economic growth in Nigeria. Government support, technological impact and investment approach were the three themes that emerges from this study. Nonetheless, challenges such as taxation policy, interest rate and FOREX are hindering the development and growth of the sector. Also, the research finds-out that technology plays significant role in the development of the manufacturing sector globally, but it plays only a small role in the Nigerian manufacturing sector, because of less technological infrastructure in the country. This is primarily attributed to the cost of investing in technology by manufacturers. Furthermore, campaign for made in Nigeria goods for a long period of time was not promoted by the government, but recently government has been encouraging it.

The scope of this research was limited in term of the numbers of the manufacturers and government officials interviewed. Seven manufacturers and two government officials were interviewed respectively. Also, this research does not consider the effect of government shifting many attentions on the manufacturing sector, instead of other sectors.

The results of this study may aid the Nigerian government in tackling the challenges facing the manufacturing sector, by providing more support, and attracting investors for the sector. This research also provides a framework for other West African countries to use as a basis for development and growth of their manufacturing sector.

Keywords

Economic Growth; Manufacturing Sector; Qualitative Research; Government Support; Technology; Investors.

INTRODUCTION

Development economics have always sought to understand and analyse why various countries are rich and why some countries are poor and it always look at how sectors in these countries impact on their economic growth. Economic development has always looked at the progress of nations with various notable classical economists such as Karl Marx, Adam Smith, John Stuart Mill, and David Ricardo explaining the factors that determine how income is distributed (Thirlwall, 2017). Modern neo-classical economists such as John Maynard Keynes, Evsey Domar, Robert Solow and Walt Whitman Rostow have revived the old interest of the classical economists by identifying savings, investments, technology, and labour surplus as the factors that changes a nation structure from agricultural sector to manufacturing and service sector (Filho, 2017). This research aims at presenting an overview of the manufacturing sector and economic growth interaction in Nigeria.

It appears that both the manufacturing sector and economic growth are mutually affected by government involvement. Government is widely associated with policy influence upon the manufacturing sector and economic growth (OECD, 2016). Likewise, the manufacturing sector itself can be influenced and altered by factors such as technology, investment, availability of raw materials and labour (Cheruiyot, 2017). And many economic growth models do choose to a greater extent socialise and become firmly involved with the manufacturing sector (Basu and Das, 2017). Manufacturer satisfaction, which can lead to more production outputs may arise from this mutual interaction. This may likely lead to economic growth in the country.

The manufacturing sector in Nigeria is the second largest economy in Nigeria behind the oil and gas sector (Nnanna, 2015). However, the sector has not shown signs of growth in recent years which has made the sector to be declining in level of production output (Ehie and Muogboh, 2016). The Nigerian government has, however, claimed that the manufacturing sector is still playing a significant role in the development of the nation's economy, with campaigns on buying made-in-Nigeria products (Fick, 2017). With such effort by the government, more sustainable growth of the manufacturing sector and the economy are more likely to happen (Adeosun, 2017).

1.2 Aims and Research Objectives

The primary aim of this study is to acknowledge the impact of the manufacturing sector on economic growth in Nigeria. Also, this research aims to analyse the problems facing the manufacturing sector in Nigeria and examine the level of government influence in the sector. To do this, this project will evaluate three major economic growth school of thoughts and how either of them apply to the Nigerian manufacturing sector. Through this research, it is anticipated that the Nigerian government may gain a greater understanding of the challenges facing the manufacturing sector and the potential value of the sector.

The research objectives of this study are therefore to:

a Analyse the extent of government support in the manufacturing sector
b. Evaluate the impact of technology in the manufacturing sector
c. Establish the impact of the manufacturing sector on economic growth in Nigeria

1.3 Research Structure

The first section is preoccupied with the theoretical background of economic development and the relationship that exists between the government, the manufacturing sector and economic growth. The research aims and objectives were also highlighted in this segment. Finally, this chapter also addresses the potential limitations of the research.

The second segment focuses on the theoretical background of economic growth and the manufacturing sector. The literature presented in this segment covers the three school of thoughts of economic growth models and their application in the manufacturing sector, by giving example of countries that have applied it. This chapter also focuses on the role of institutions in the Nigerian manufacturing sector. Finally, in this segment, rationale for this research emerges from the literatures that have been reviewed.

The third segment of this research is the methodology section. This segment considers the philosophical approach to this research, the research method and strategy, and how the data is analysed. Qualitative research method through interview was used in this research. This chapter also highlights the interview questions, and takes into consideration; ethics, validity, and reliability of this study.

The fourth segment of this research gives background information of the manufacturers and government officials interviewed. Analysis of the data gathered using content analysis data was used to generate results which lead to the schematic representation of economic growth in Nigeria.

In chapter five, the results and findings were discussed and overall conclusions of the research, the limitations, and recommendations for further study and policy.

In the fifth segment, the results, findings and overall conclusions of the research. The limitations, and recommendations for further study and policy were discussed.

1.4 Potential Limitations

This research looked at the challenges and contributions of the manufacturing sector in Nigeria, without looking at other sectors contribution to economic growth.

2.0. Literature Review

2.1. Defining economic growth

Economic growth has recently and widely been recognised as the fundamental objective of human activity in a well structure organisation (Ranis et al. 2000). As part of the research in to the impact of the manufacturing sector on economic growth, it is paramount to recognize that there are new types of knowledge and contemporary ways of achieving economic growth as countries are acclimatizing to a transforming society (Cline, 2010).

Barro and Sala-i-Martin (1995) pointed-out that economic growth is the increase in the real gross domestic product (GDP) of a country and this increase in GDP suggests that there is a rise in value of the country production or output and its spending. Chaturvedi, and Chandra (2015) define economic growth as the rise in the number of goods and services manufactured or assembled per head of a population over a stretch of time. However, Jorgenson (2016) noted that though economic growth might always have an element of increase in the GDP, but not all growth as portrayed by the GDP are positive growth, because GDP consist of figures

which does not capture the reality of life. This assumption reflected (Daly, 2013) eleven confusions about growth. Daly (2013) stressed that growth in knowledge per head of the population is not captured by the GDP, and this shows that GDP cannot be a measurement of growth always. Hence, there are elements of inconsistency regarding GDP and economic growth. In this regard, Saci and Holden (2008) argue that defining economic growth and its components have been onerous and demanding.

Exogenous growth defines and measures growth with the influences of external factors. Examples of these include the influence of crude oil price by set by Organization of the Petroleum Exporting Countries (OPEC), natural disaster and war (Swiadek, 2013). In contrast to this, endogenous growth as pointed-out by Slobodan et al. (2015), is mainly concerned with the internal forces that pushes an economy towards growth, and examples include human capital investments, knowledge and innovations and these factors contribute significantly to economic growth. This argument has made various economists to align with various school of thoughts on theories of economic development (Diab et al. 2016). Furthermore, Chang, (2010); Ericson, (2015); Hartwell, (2017) and North, (2017) identify three major economic growth school of thoughts and their models.

I. Harrod-Domar growth model (1939 and 1946).
ii. Solow-Swan growth model (1956)
iii. Rostow five stages growth model (1960)

2.2. The Manufacturing Sector

Manufacturing is the process of transforming raw materials into a whole new product Flath (2014). He notes that the transformation of raw materials involve a rigorous process called manufacturing process. Various scholars often use production as another term for manufacturing.

Sloman (2016) identifies three sectors of the economy. The first of the three is the primary sector and it involves the extraction of raw materials. Secondly, the secondary stage which is referred to as the manufacturing sector is saddled with the responsibility of producing finished products and thirdly, the service sector which is concerned with providing intangible commodities.

Pumpinyo and Nitivattananon (2014) define reverse logistics as the technique used for transfering a product from its storage space to another location with the motive of selling it or for appropriate disposal. The however, conclude that although China and Brazil manufacturing sector lack good internal consistency and a good reverse logistic technique in the past, the sector for both countries are among the leading sectors in the world. In support of this assertion, Mamic (2014) claims that Shenzhen which is a district in China, will boost the manufacturing sector to be the leading sector by 2020. However, Deloitte (2016) in its global manufacturing competitiveness index (GMCI table 1) report shows that China manufacturing sector is the leading sector in the world, followed by USA and Germany. However, the GMCI future forecast report (GMCI table 2) indicates that USA might overtake China as the leading manufacturing sector by the end of the decade. However, countries are still putting in strong policies to achieve competitive advantage in the manufacturing sector.

Table 1: Global manufacturing competitiveness index (GMCI)

2016 (Current)		
Rank	Country	Index score (100=High) (10 = Low)
1	China	100.00
2	United States	99.5
3	Germany	93.9
	Japan	80.4
4	South Korea	76.7
5	United Kingdom	75.8
6	Taiwan	72.9
7	Mexico	69.5
8	Canada	68.7
9	Singapore	68.4
10	India	67.2
11	Switzerland	63.6
12	Sweden	62.1
13		
14	Thailand	60.4
15	Poland	59.1
16	Turkey	59.0
17	Malaysia	59.0
18	Vietnam	56.5
19	Indonesia	55.8
20	Netherlands	55.7
21	Australia	55.5
22	France	55.5
23	Czech Republic	55.3
24	Finland	52.5
25	Spain	50.6
26	Belgium	48.3
27	South Africa	48.1
28	Italy	46.5
29	Brazil	46.2
30	United Arab Emirates	45.4
31	Ireland	44.7
32	Russia	43.9
33	Romania	42.8
34	Saudi Arabia	39.2
35	Portugal	37.9
36	Colombia	35.7
37	Egypt	29.2
38	Nigeria	23.1
39	Argentina	22.9
40	Greece	10.0

Source: "Deloitte (2016, p.4)"

Table 2: Manufacturing competitiveness index (GMCI) future forecast for 2020

2020 (Projected)			
Rank	2016 vs. 2020	Country	Index score (100=High) (10=Low)
1	(▲ +1)	United States	100.0
2	(▼ -1)	China	93.5
3	(⟷)	Germany	90.8
4	(⟷)	Japan	78.0
5	(▲ +6)	India	77.5
6	(▼ -1)	South Korea	77.0
7	(▲ +1)	Mexico	75.9
8	(▼ -2)	United Kingdom	73.8
9	(▼ -2)	Taiwan	72.1
10	(▼ -1)	Canada	68.1
11	(▼ -1)	Singapore	67.6
12	(▲ +6)	Vietnam	65.5
13	(▲ +4)	Malaysia	62.1
14	(⟷)	Thailand	62.0
15	(▲ +4)	Indonesia	61.9
16	(▼ -1)	Poland	61.9
17	(▼ -1)	Turkey	60.8
18	(▼ -5)	Sweden	59.7
19	(▼ -7)	Switzerland	59.1
20	(▲ +3)	Czech Republic	57.4
21	(▼ -1)	Netherlands	56.5
22	(▼ -1)	Australia	53.4
23	(▲ +6)	Brazil	52.9
24	(⟷)	Finland	49.7
25	(▲ +2)	South Africa	49.3
26	(▼ -4)	France	49.1
27	(▼ -2)	Spain	48.4
28	(▲ +5)	Romania	45.9
29	(▼ -3)	Belgium	45.8
30	(▼ -2)	Italy	45.0
31	(⟷)	Ireland	43.7
32	(⟷)	Russia	43.6
33	(▼ -3)	United Arab Emirates	42.6
34	(▲ +2)	Colombia	40.9
35	(⟷)	Portugal	40.1
36	(▼ -2)	Saudi Arabia	36.1
37	(⟷)	Egypt	28.3
38	(⟷)	Nigeria	25.4
39	(⟷)	Argentina	24.6
40	(⟷)	Greece	10.0

Source: "Deloitte 2016

Moving forward, it is important for this research to dwell into how economic theories on development have been applied to the manufacturing sector.

2.3 Application of economic theories and conceptual framework in the manufacturing sector

Analysing economic development through manufacturing sector will not be complete unless one of the three schools of thought of economic theories is applied. Prabagar (2016) claims that the Harrod-Domar growth model emphasises on savings and investment in order for a country to grow and develop.

Furthermore, Prabagar (2016) concludes that the model is not a good strategy for countries to apply because too much saving for countries would affect infrastructure development of various sectors including the manufacturing sector. Chowdhury (2016) pointed-out that Harrod-Domar growth model incorporate institutional and structural issues of the economy by providing solution based on reality and practicality. The Harrod-Domar growth model was been used by the Japanese government to boost the manufacturing sector which involves savings and investing some capital on the sector (Audretsch, 2007).

However, there has been various key limitations of the Harrod-Domar model as concluded by Todaro (2015). Saving ratio for low income country often times do not increase. This lack of increase in saving ratio is what Secondi (2008) refers to as low marginal propensities to save. Rossi (2014) concludes that a significant limitation of the Harrod-Domar model is not considering the low marginal propensities of developing countries. Similarly, Gürak (2015) pointed-out that for developing countries, supplementary income is preferably spent on consumption instead of been saved. This savings problem for many developing countries is referred to as domestic saving gap.

Another limitation of this model is that the ratio of capital output acquired through efficiency is strenuous for less developed countries, because of weaknesses of its labour investment and human capital which amount to inefficient use of capital (Piętak, 2014). A major critique of the Harrod-Domar model was that research and development required to enhance the capital output is underfinanced. This is a major cause of market failure for the manufacturing sectors Finally, Piketty and Goldhammer (2014) argue that the accumulation of capital tends to increase if the manufacturing sector begins to sprout dynamically. Therefore an increase in capital is not automatically a condition for economic growth. In support of this argument, Knibbe (2014) concludes that the assumption that increase in capital will automatically lead to economic growth according to the Harrod-Domar model is not necessarily certain because the richer the manufacturing sector, labour income rise, so also does savings, and the impact of increase in income is that it enhances capital investment spending over an extended period. However, the strongest criticism of the Harrod-Domar model was the exclusion of technology as a yardstick for growth in the manufacturing sector.

Consequently, the various limitations highlighted by the various scholars that the Harrod-Domar model of growth was limited to only develop countries and even if the developing countries do not focus on technology, they will be less competitive in their manufacturing. This significant concern gave room for the rise of other school of thoughts.

The second school of thought which is the Solow-Swan growth model of 1956 is popular because of its neo-classical approach to solving economic development problems (Dehejia, 2013). This model was formed base on the Harrod-Domar growth model (Liening, 2013). Perhaps, because of the growing influence of technology in the manufacturing sector, the Solow-Swan growth model was integrated with technology. Dohtani (2010) observes three significant assumptions in this model. Firstly, emphasis on the impact of technology in the manufacturing sector was in depth, which shows that if government or manufacturers invest in technology, the sector will grow in a brief period and the cost of outsourcing will be reduced. Secondly, the model identifies a stage called the steady state which arises from investing savings that occurs from using technology. Such as savings on labour and outsourcing cost. Taylor (2016) claims that a steady state implicate that the manufacturing sector will not remain stagnant if additional means of growth is established.

Finally, the role of saving was also identified. Tang and Tan (2016) maintains that the role of savings as identified by Solow-Swan model shows that a sector that dedicates a substantial portion of its income to savings will have a higher steady capital and a high volume of income. In addition, Taylor (2016) pointed-out that the high the income per person or per sector, the high the investment on percentage output for the person or sector. Furthermore he argues that another assumption that government and manufacturers do not pay significant attention to is the role of population in the economy. He maintains that if the population is growing, the consumption rate of the economy will increase and this will give rise for the manufacturers to increase their productivity. In support of Taylor (2016) argument, Dellink (2017) maintains that population growth will lead to massive development through technology specifically in a manufacturing sector.

Although the Solow-Swan model summarises how growth can be achieved through production and

reduction of labour through technological progress, there are still some criticisms of this model. Bianca and Guerrini (2014) argue that Solow-Swan model assumption on technological progress will cause increase in unemployment ratio for an economy. In fact, Asongu and Nwachukwu, (2016) conclude that the impact of technology in the application of Solow-Swan model in African countries will result in high unemployment because of the growth in population. Therefore, growth in the manufacturing sector for many countries is only possible at the steady state, but it will not be a sustainable one.

Rostow (1960) developed a five stages growth model that form the bases of achieving and sustaining growth through agriculture and production. He concludes that this model was the most structured model and it gives a step-by-step route to economic development through production and agriculture. The Model specifically explains how each sector of the economy can be applied to the model (McMicheal, 2011). Focusing on the secondary sector which is the manufacturing sector, the first stage for growth explains that the manufacturing sector has a limited production function which scarcely reaches the level of probable output.

However, Dorlach (2015) argues that the limited production function does not entirely mean that the manufacturing sector production level is lacking movement or static. The second stage highlighted by Rostow model is the pre-condition for take-off for the manufacturing sector. Arnold (2003) uses qualitative research to analysis the growth stages of Rostow model in the manufacturing sector and he concluded that the manufacturing sector prepares itself for new challenges which will lead to its development. Kontorovich (2015) and Benini (2016) pointed-out that the model summarises three conditions for this take-off. Firstly, the traditional system of production should begin to move towards a proper manufacturing or industrial sector, albeit slowly. Secondly, the goods produced should not only be commercialised in the state but also other regions, opening door for international market.

Finally, the surplus or profit gained from the sales of this goods should not be mismanaged by the entrepreneur or the government. The surplus should be used to develop the manufacturing sector. The third stage of the model which is the take-off stage is emphasised on the effort the government of a country has made to get the secondary sector to grow rapidly using China and United States as a case study. Rostow (1960) himself explained that for the secondary sector to take-off, three conditions must be fulfilled. Firstly, the rate of high-yielding investment should increase from 5% to more than 10% of the total national income. Secondly, the development of more than one major manufacturing sector with a positive rate of growth. Thirdly, there should be a political and institutional structure which undertake the expansion of the manufacturing sector in the whole economy generally. The drive to maturity is the fourth stage of the model. Thirlwall (2017) argues that this stage is when technology defines the bulk of manufactured products. Rist and Camiller (2014) summarises this stage as when the techniques of production improve, new industries emerge, the older ones' level-off and the goods that are usually imported are produced in the country, making the economy an international economy. However, Minasyan (2016) argues that the key sector in the economy will be established by the resource endowments of each sectors and not necessarily by technology. The theory claims that countries that follow the stages up to the maturity stage will eventually have a stable manufacturing sector and they can stay at that point up to sixty years.

Finally, the last stage of the model is high mass consumption stage. The manufacturing sector declines, because the economy is moving toward service sector. Musahara's (2016) survey of the manufacturing sector in Eastern Africa shows that government during high mass consumption tend to shift towards the service sector and this affects the development and contribution of the manufacturing sector to the economy.

2.4 The Role of Institutions in Nigeria

Growth and development cannot happen in an institutional emptiness. Thirlwall (2017) maintains that the growth and maturity of the manufacturing sector need an institutional framework that enables production to take place in an orderly manner and in that manufacturers, know that decisions they take on standard of operations are governed by law. The role and effect of government policies in the Nigerian manufacturing sector cannot be underestimated. In 1986, the first policy the Nigerian government put in place to direct the structure of the economy was the Structural Adjustment Program (SAP) from World Bank which has no impact on the manufacturing sector but only on the oil sector (Folawewo, 2016). Some analysts conclude that this was the genesis of the problem of the Nigerian manufacturing sector. Dauda (2017) argues that sectoral policies are not popular in Nigeria, except for the oil and gas industry. However, Karimo and Ogbonna (2017) claim that the Nigerian Investment Promotion Commission (NIPC) promote sectoral policies for the sectors they regard to have potentials. Emodi (2016) argues that the NIPC promotes all sectors irrespective of its potentials, but the oil sector is given priority because of its contribution to the growth of Nigeria.

Over the years, the Nigerian government has not had any significant policies to stimulate growth in the

manufacturing sector (Adeola and Ikpesu, 2016). However, Olusegun and Olusola (2016) pointed-out that agencies such as the Standard Organisation of Nigeria (SON), National Agency for Foods and Drugs Administration Control (NAFDAC), and the Nigeria Exporting Promotion Council (NEPC) were specifically set-up to administer and manage the manufacturing sector. An analysis carried-out by the Manufacturers Association of Nigeria (MAN) in 2011 shows that these agencies are not providing any support for them, rather they manipulate and exploit manufacturers to get things done (Umeokeke et al. 2017). He concluded that for the Nigerian manufacturing sector, government allows firms with turnover below ₦1 million to be taxed at a lower rate of 20% for the initial five years of operation and dividends will not be taxed for this period. Furthermore, tax exemption on dividends was issued to manufacturing companies that produce chemical, petrol and liquefied natural gas.

Finally, Oluwatayo (2017) claims that the government charge high tariff on electricity; yet, the electricity is not stable, which makes some manufacturing firms in Nigeria to shut down, because they cannot afford high capacity generator for their operations.

Nonetheless, Alley et al. (2016) argues that privatization of some manufacturing companies by the Nigerian government has paved the way for the growth of technology in the sector, and in the next few decades the sector will be competing at the international stage. Also, Umezulike (2016) maintains that the partnership of the Nigerian government with Chinese, Japanese, and Singapore government on improving the manufacturing sector will promote technological advancement in the manufacturing sector.

3.0 Research Methodology

There are two basic opposing ways to approach research, deductive and inductive approach. The deductive approach is usually a top-down approach starting from theory and linking the theory to observation or interview to confirm the relevance of the theory in existence. However, Spector (2014) claims that an inductive approach is concerned with using observations to generate new theory.

This research will be approached from a deductive angle because it is built around economic development theories. The foundation of this research is the three school of thoughts of economic growth. Semi-structured interview was used to test how the manufacturing sector has grown over the years and its impact on economic growth in Nigeria. The findings from the interviews were used to confirm the relevance of the economic theories in the Nigerian manufacturing sector. The community in this research are the Nigerian manufacturers. Economic growth in quantitative research uses GDP as measurement. However, researchers have in recent years question its impact, especially in African and Asian countries. In support of this, Decancq and Schokkaert (2016) suggest that economic growth researchers in Europe should look beyond GDP as a measurement of growth and focus more on the perception of growth in the region. Hence, this indicates the justification for using a qualitative research approach.

4.0. Result

In this research, it was critical to gain a perspective from the manufacturers and government officials, in order to find out how they perceive growth through government support and technology. The data are from seven manufacturing companies based in the south-western part of Nigeria and two government officials. The data, though focused on only seven south-western Nigeria manufacturing companies. However, it is a good example of how the manufacturers perceive growth as the south-western manufacturing sector in Nigeria have the largest production factories in Nigeria.

The data gathered are from the head of operations of these manufacturing companies. They are saddled with the responsibilities of making the factories keep running. Also, same can be said about the data gathered from the government officials who are from the Ministry of Commerce and Industry in Nigeria. The ministry is responsible for the growth of the sector and how business is conducted in the sector effectively. However, because of the subjective nature of qualitative research, future data collection could be approach in a substantially extensive way. With the inclusion of several manufacturing companies from other regions in Nigeria, and also more government officials from the ministry of works as long as the characteristics of growth is defined (Mankiw, 2016).

4.1. Interview Data

Table 3: Analysis of data on the impact of manufacturing sector on the economic growth

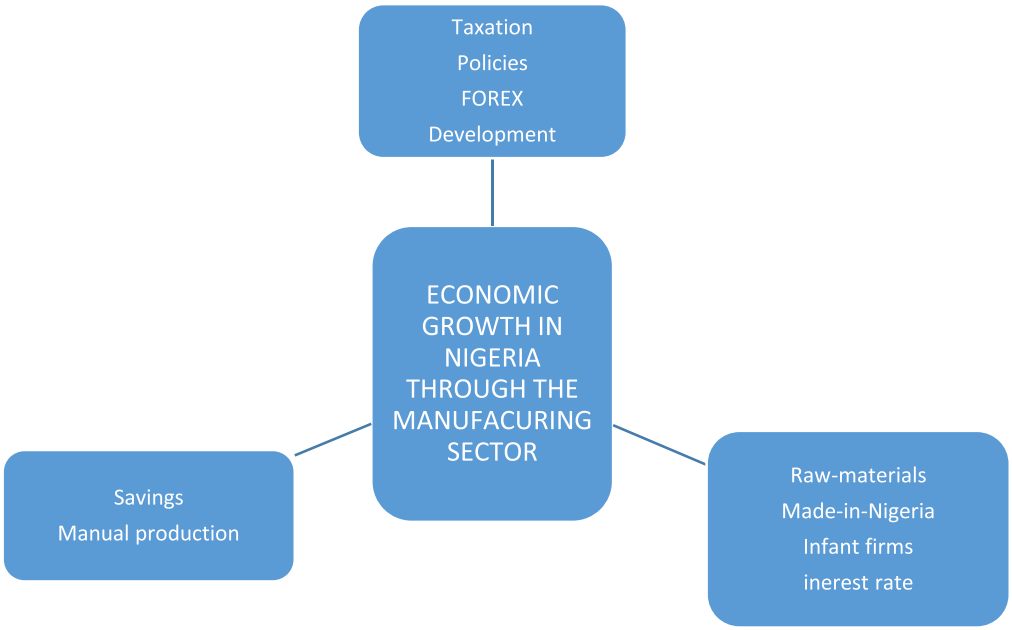
	Transcription 1	Transcription 2	
Themes	Manufacturers	Government officials	Total
Government support			
Taxation	9	2	11
Policies	9	2	11
Forex	8	2	10
Development	4	4	8
Jobs	1	1	2
TOTAL	31	11	42
Technology impact			
Savings	4	1	5
manual production	5	0	5
automated production	2	0	2
TOTAL	11	1	12
Investment approach			
raw materials	4	1	5
made in Nigeria	1	4	5
infant firms	1	3	4
interest rate	4	0	4
Loan	1	1	2
TOTAL	11	9	20

4.2. Summary of Results

After the extrapolation of the data from interviewing the manufacturers and the government officials, a schematic representation was created to show weakness in the Nigeria manufacturing sector. This schematic representation is designed from the popular responses of the interviewees to show the Nigerian manufacturing sector. Therefore, if the manufacturing sector impact on the Nigerian economy is to grow according to the manufacturers and government, the schematic representation should be studied.

Figure 1: Schematic representations of economic growth in Nigeria

Figure 1: Schematic representations of economic growth in Nigeria



The data were separated into three themes which are government support, technology impact and investment approach and the popular responses were highlighted. From the data collected, the interviewees emphasised on the significance of taxation, policies, savings, and raw-materials and made in Nigeria goods. Perhaps, the economic growth theory emerging from this data combines the Harrod-Domar, Solow-Swan, and Rostow growth models as a new growth theory in Nigeria.

5.0. Conclusion and Recommendations

5.1 Conclusion

This project was undertaken to analyse the extent of government support in the Nigerian manufacturing sector, to evaluate the impact of technology in the Nigerian manufacturing sector and to establish the impact of the Nigerian manufacturing sector on economic growth in Nigeria. This research has analysed various literatures in the field of economic growth. Three economic growth schools of thought were established and examined how these economic theories have been applied to countries like the United Kingdom, USA, China, and Japan. Furthermore, the literature examines the global manufacturing sector and how the competition for leadership in the sector is viewed. The literature also concentrates on the role of institutions such as government, and technology in the Nigerian manufacturing sector. From examining these literatures, this research finds-out that the Nigerian manufacturing sector lacks the impact other countries' manufacturing sector have on their economic growth which demonstrates the rationale for this research. The literatures also show that technology was the main source of development in the developed countries manufacturing sector. This also adds to the rationale of this research work.

The research method adopted was a qualitative approach from an interpretivist point of view. A semi-structured interview was used to gather data from seven manufacturers and two government officials in order to gain impartial perspectives on the impact of the Nigerian manufacturing sector on Nigerian economic growth. The result from this study shows that the manufacturing sector has less impact on the economic growth of Nigeria. This study identified three phenomena that hinder the impact of the manufacturing sector on economic growth in Nigeria.

The first major finding was that the Nigerian government does not provide adequate support for the manufacturers to have a conducive environment for production. The second finding was that technology does not play a significant role in the Nigerian manufacturing sector because of the high capital involved in the procurement of technological tools. The final finding of this research is that there is less investment in the manufacturing sector. Therefore, government support, technology impact and investment approach emerged as reliable proposals for the impact of manufacturing sector on economic growth in Nigeria.

5.2 Recommendations

This research provides recommendations for further research on the impact of the manufacturing sector on Nigeria economic growth. The research also provides policy recommendations for the Nigerian government based on the findings of this study.

5.3 Recommendations for further research work

This research did not focus on the role of Gross Domestic Product (GDP) in the manufacturing sector. Further studies regarding the role of GDP in the manufacturing sector would be worthwhile. This research method was purely qualitative; it would be interesting to assess how quantitative method would apply in this research. Further research might also explore a mixed method. The quantitative aspect should focus on data such as industrial output of the manufacturers, foreign direct investments, inflation rate and total savings from the manufacturing sector. While the qualitative aspect should compare experiences of manufacturers from the six regions in Nigeria through interviews.

Further research in the field of economic growth would be of great help in propounding a new economic growth theory instead of the most recent which is the Rostow model. The further research should be conducted to determine the effectiveness of the secondary sector on economic growth in Nigerian. Also, research on government policies in the manufacturing sector should be carried-out and the research should focus on failures of those policies.

5.4 Recommendations for policy

The first thing the Nigerian manufacturing sector needs is for government to review taxation policy and foreign exchange policy. The manufacturers complained about the taxation system which makes the federal government, state government and the local government tax the same thing. The Nigerian Joint Tax Board (JTB) should list the taxes the Federal Inland Revenue Service (FIRS) and the State Inland Revenue Service (SIRS) are to collect from the manufacturers. Assigning each government tax body its responsibilities would solve the problem of multiple taxation in the manufacturing sector. This would make the taxation system to be transparent and manufacturers would know what they are been taxed for. Bruhn and Loeprick (2016) claim that the Georgian government assigned tax responsibilities to various government agencies to solve the problem of multiple taxation.

The second policy to review is the currency control policy. The current currency control policy does not favour the manufacturers which causes disruption in their activities. The Nigerian government through the Central Bank of Nigeria (CBN) should run a transparent system where the manufacturers would be granted FOREX at a normal rate. The exchange rate should be the international exchange rate rather than the black-market rate. This would allow the manufacturers to access raw-materials from abroad pending the time the government invest heavily in local materials.

The second recommendation of this research is for the Nigerian government to reduce the interest rate charged by banks to manufacturers. Currently the interest rate stands at 14%. Interest rate in the UK stands at 0.25%, while USA stands at 1.25%, Canada stands at 0.75% while Australia stands at 1.5% (Global rate, 2017). Comparing these countries rate to the Nigerian interest rate, it shows that the Nigerian government need to reduce interest rate in order for the manufacturing sector to grow. According to the Deloitte (2016) global manufacturing competitive index forecast for the year 2020 show that USA, China, South Korea and UK as the leading countries in manufacturing, while Nigeria stands at number 38. Perhaps this is due to the interest rate charged by the banks in those countries. Therefore, it is important for the Nigerian government to reduce interest rate so that the manufacturing sector can flourish.

The final recommendation would be for the government to invest heavily in technology for the manufacturing sector by inviting foreign and local investors to invest in the sector. Richards (2016) highlights three main investors' challenges in Nigeria; security, corruption and government red tape. The Nigerian government should provide security assurances to foreign investors so that one of their fears can be conquered.

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Does Exchange Rate Misalignment Respond to COVID-19 and Containment Measures in Nigeria?

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Abstract

The outbreak of COVID-19 and the measures to contain the spread of the virus hindered free flow of goods and caused uncertainty in capital flows. These exogenous shocks affect both nominal and real exchange rate. Thus, making the later to overshoot its trajectory. To investigate the impact of COVID-19 and government restriction measures on exchange rate misalignment, the estimated values of exchange rate misalignment was derived from the Behavioral Equilibrium Exchange Rate approach (BEER) using Auto regressive and Distributed Lag (ARDL) technique. We then applied Instrumental Variable Two Stage Least Square (IV-2SLS) and Dynamic OLS technique for estimating our result using daily data from 3rd February to 31st December, 2020. To transform some of the monthly data set to daily data, we used the quadratic match average. The empirical result shows that stringency measures STM and GRM applied by the government during COVID-19 period increases the incidence of exchange rate misalignment. Death rate during COVID-19 is positive but not significant in both regression. However, increase in cases of COVID-19 increase exchange rate misalignment as indicated in both regression results. The recommendation that stems from this research is that government should put in place both short-term measures to deal with the economic shock and long term post-pandemic efforts to rebuild and restart. These measures will be implemented at the local and national levels. Also, it will be important to provide a clear narrative aimed at highlighting the links between the spread of the virus, its causes and consequences, as well as the implementation of economic support through appropriate government policy intervention to effectively improve market liquidity which will stem volatility in the financial market.

Keywords: *Real exchange rate misalignment; COVID 19: Government Response.*

JEL classification: *F13; G15; I18*

1.0 Introduction

The Corona Virus pandemic has plunged the world into an unprecedented health and economic crises. Various sectors of the global economy such as aviation, manufacturing, tourism, financial sector, trade and education was seriously affected due to the scourge of the virus (Fu and Shen, 2020). This has attracted interest by researchers on the macroeconomic impact of the pandemic. For instance, previous research explored the effect of Covid-19 on industrial production, gross domestic product (GDP) growth, household consumption, employment, global supply chains and innovation ability (Binder, 2020; Han and Qian, 2020). Most recently, research effort has also been extended on the impact of COVID-19 on financial markets. The focus of these literature has been on stock returns (Liu, Choo and Lee 2020: Salisu and Sikiru, 2020; Yan and Qian, 2020); exchange rate (Iyke, 2020; Narayan, 2020); oil prices (Devpura and Narayan, 2020). The major channels through which the pandemic hit countries are mainly through the containment measures adopted to halt its spread, which include closure of border, businesses, schools and social services etc.

Rise in global trade volumes indicates an increase in international capital flows. However, the outbreak of the virus significantly affected international capital flows due to containment measures adopted globally (Qin et al 2020b). This reduction in global capital flows will provoke an upward review of risk by financial institution due to unbalanced demand for international financial assets. As a result of this, investors may change their compensation for currency holding thus, causing volatility in exchange rate (Feng, Yang, Gong and Chang, 2021; Dabbelle 2020; Gabaix and Maggiori 2015). The empirical works mentioned above give useful insights on the mechanisms through which the outbreak of the disease and government prevention effort affect fluctuations in exchange rate. Higher fluctuations in exchange rate increases financial market risk, uncertainty in foreign investment, coupled with

exogenous shock from COVID 19 and government intervention, these could cause nominal disturbances which affects the real exchange rate.

This study utilizes data on exchange rate misalignment generated using the Behavioural Equilibrium Exchange Rate approach (BEER), COVID-19 cases and the stringency index developed by Oxford University. This paper thus, applies the instrumental variable two stage least square (IV-2SLS) and dynamic OLS to estimate the impact of COVID-19 and government containment measures on exchange rate misalignment. Based on the literature reviewed so far, empirical works on the impact of COVID 19 on exchange rate fluctuations is small and evolving. studies on COVID 19 and related issues has been centered on its impact on output, global supply chain, manufacturing sector, financial markets, exchange rate volatility. To achieve the objective of this research, the remaining of the paper is as follows, review of related literature is presented in section 2. Section 3 dwelt on the methodology. Section 4 discusses the results, while Section 5 highlights the policy implication and recommendations.

2.0 Empirical Review and Theoretical Framework

Increasing uncertainty in periods like COVID-19 pandemic makes portfolio risk management, exchange rate movement and asset allocation a major challenge for equity investors, traders, hedgers, portfolio managers etc. This is because growing uncertainty reduces investments, according to Bernanke, (1983) uncertainty in the financial market pose significant threat to portfolio risk management, thus increases investor fears. The rapid spread of COVID-19 has significantly increased uncertainty in both the financial and commodity markets (Mhalla, 2020; Zhang, Hu and Ji, 2020). The integration and interdependence among countries and the imposition of severe restriction by the government to contain the spread of the virus significantly affected global supply chain affected volume of trade and financial market. Stock and exchange rate market experienced widespread disruption as the number of cases and death rate increases exponentially thus, making investors to become risk-averse.

Also, the fall in global trade volume due to lock down measures will inevitably affect international capital flows. For instance, according to Gobaix and Maggiori (2015), reduction in global capital flows will provoke an unbalanced demand for international financial assets, triggering the tendency for investors to change their compensation for currency holdings and thereby impacting exchange rate volatility in the short run. However, in the long run, this will precipitate unwarranted movement in exchange rate causing it to deviate from its equilibrium path.

The economy-wide effect of COVID-19 pandemic do not only affect livelihood though its impact livelihood through its impact on death rate and implementation of measures to curtail the spread of the disease (WHO, 2020). The literature on the impact of the virus and measures to curtail it spread on financial sector is scanty and still ongoing. The outbreak of the pandemic in 2019 had triggered unprecedented effect on the global economy and has significantly affected key sectors that constitute the engine to the global economy (Fu and Shen 2020; Nicola, Alsafi and Sohrabi, 2020). These effects are not restricted to the virus alone, government containment measures like lockdown, and social distancing and restrictions on travels have also impacted the global economy negatively. According to Ceylan (2020) government containment measures like lockdown has imposed severe economic cost on many enterprises.

The continuous spread of the virus and its impact globally has arose the curiosity of researchers on the possible impact of the pandemic on many facets of the economy. These includes the impact of the pandemic on supply chain (Bonadio et al 2020; Qin et al 2020), manufacturing output (Altig et al 2020; Appiah-Otoo 2020), output growth (Vidya and Prabheesh 2020), household consumption and poverty (Binder 2020; Gerszon et al 2020; Janssen et al 2021; Summer et al 2020), employment (Montenovo et al 2020; Dang & Nguyen 2021), global supply chains and innovation ability(Bonadio et al 2020; Han & Qian 2020).

The empirics on the impact of exchange rate volatility on external environment and trade acknowledges a significant co-movement. When exchange rate fluctuates, it leads to financial market risk and also increase uncertainty in foreign investment. In addition to the exogenous shock from the pandemic and effort to reduce the transmission, nominal and real exchange rate could be affected, causing the later to overshoot its trajectory or caused exchange rate misalignment. The existing empirical literature has explored the nexus between exchange rate volatility and COVID-19 pandemic (see Debelle 2020; Feng et al, 2021). The present effort is to examine the link between the pandemic and measures to reduce the spread on exchange rate misalignment[1]. Review of recent empirics showed that there is no research that has explored this crucial link.

3.0 Data, Econometrics Model and Estimation Procedure

3.0 Methodology

[1] Exchange rate misalignment is the differences between real exchange rate and its equilibrium values.

3.1 Model Specification

The standard form of the RER and its fundamentals under BEER approach is as follows

$$RER_t = \alpha_1 + \beta_1 GCE_t + \beta_2 IRD_t + \beta_3 OPP_t + \beta_4 NER_t + \beta_5 RGDP_t + \varepsilon_t \quad 1$$

Where RER is the log of real exchange rate, GCE is the log of government fiscal stance, IRD is the real interest rate differential, OPP is the log of openness index, *RGDP* is the log of real GDP, NER is the log of nominal exchange rate. The aprio ri expectations of variables in our model is presented in eqn.2 below

$$RER = f(\underset{-}{RGDP}, \underset{-}{IRD}, \underset{+}{OPP}, \underset{\mp}{GCE}, \underset{-}{NER}) \quad 2$$

To estimate the impact of COVID-19 and government containment measures on exchange rate misalignment, this paper follows the classical literature on exchange rate and pandemic (Noy and Vu 2010; Gabaix and Farhi 2015; Geng-Fu et al 2021). Estimating the impact of COVID-19 and government response on exchange rate misalignment is very challenging due to omitted variable bias and endogeneity.The IV-2SLS estimation technique accounts for a solution to this problem via the incorporation of instruments within the econometric model/s (Benda and Corwyn 1997). The choice of the instruments is crucial to determine the outcome of the regression estimates. The instruments are used to modify the problem of endogenous regressor/s being correlated with the error term. To overcome these empirical challenges, interest rate (*INT*), external reserve (*ETR*) and CPI as control variables. The model estimated for the outcome variable with respect to the independent variables has the form

$$MISAL_t = X_t + Z_t + \epsilon_t \quad 3$$

Where $MISAL_t$ represent the outcome variable (RER misalignment) X_t is the endogenous variable (Death rate and Cases of COVID-19), Z_t is the exogenous variable (stringency measures *STM*; government response *GRM*; Economic support index *ESM*; Containment and health index *CHM*). The IV-2SLS estimation involves two steps. In the first step, the instruments are used to transform the endogenous regressor/s (Death rate DRT and Cases of COVID 19 *CAS*) in other to estimate its predicted value, by regressing eqn. 4 & 5 to obtain their predicted values.

$$DRT_t = INT_t + CPI_t + ETR_t + Z_t + \epsilon_t 4$$

$$CAS_t = INT_t + CPI_t + ETR_t + Z_t + \epsilon_t 5$$

In stage 2, we replaced the endogenous value obtained from eqn. 4 & 5 and substitute it into equation 6 & 7. The model in the second stage can be written as

$$MIS_t = P(DRT)_t + Z_t + \epsilon_t \quad 6$$

$$MIS_t = P(CAS)_t + Z_t + \epsilon_t 7$$

The estimated coefficients obtained from equation 6 & 7 are presumably unbiased, provided the proper qualities of the IVs are ensured.

3.2 Data and Sources

The variables commonly used in the applications of BEER approach to estimating exchange rate misalignment are productivity, terms of trade, interest rate differentials, government expenditure, openness etc. In this work, we use the ratio of government expenditure to GDP (GCE) as a proxy for government fiscal spending (consumption), both total government expenditure and nominal GDP are obtained from CBN Statistical bulletin. The effect of GCE on equilibrium RER depends on if such expenditure is tailored to tradable on non-tradable sector.For instance, depreciation will occur if the improvement in GCE induces not more than proportionate reduction in private saving, so that a fall in aggregate domestic demand (following decline in spending on non-tradable goods) would lead to a fall in domestic prices, bringing about a depreciation of the RER.

We also use real interest rate differential captures the effect of foreign and domestic monetary policy stance. High domestic interest rate compared to foreign interest rate (proxied with US interest rate) is expected to be associated with an appreciated RER due to inflow of capital (Mahraddikka, 2020). Both data are obtained from IFS statistics. Openness (OPP) is obtained by exports plus imports divided by nominal GDP. Assuming that tradable and non-tradable are perfect substitute, higher OPP leads to greater demand for tradables. As such, to restore equilibrium, RER has to depreciate. Increase in nominal exchange rate (NER) leads to appreciation of the RER. Dornbusch (1976) showed how rapid adjustments in NER due to exogenous disturbance could increase variability in RER.

To further explore the impact of the pandemic and government response on exchange rate misalignment, we use the comprehensive classification indicator by Oxford COVID-19 government response tracker (OxCGRT) obtained from https:\\ourworldindata.org. This study used four comprehensive indicator from this data set which include; stringency index (STM), containment and health index (CHM), economic support index (ESM) and overall government response index (GRM). Although, these indexes are further subdivided into several components, this study utilized there aggregate values. The control variables used in this study include: interest rate (INT), external reserve (ETR) and inflation rate proxied with CPI, all in their log form. They are selected based on the work of Anderson et al. (2003) and Fatum et al (2012) the relationship between these variables and that of currency market to be significant.

4.0 Discussion of Results, Findings and Policy Implications

4.1 Discussion of Results

To derive the appropriate econometric specification for the study, we examine the nature of stationarity of the series. Table 1 present a number of univariate stationarity test for the data. The result indicates that the null hypothesis of a unit root in each of the series cannot be rejected against the alternative hypothesis of stationarity around a deterministic linear trend in both Augmented Dickey Fuller test (ADF) and the Philip Perron test (PP), amongst these series are interest rate differential (IRD), norminal exchange rate (NER), openness index (OPP) and real exchange rate (RER). However, the variable real GDP (RGDP) and government consumption expenditure (GCE) are stationary at levels. The mixture of I(0) and I(1) in our stationarity result suggest the use of ARDL technique.

Table 1: Unit Root Test

	ADF				**PHILIP PERRON**				
	Levels		1st Diff		Levels		1st Diff		OOI
	C	C&T	C	C&T	C	C&T	C	C&T	
IRD	-0.46	-2.20	-5.37	-5.44	-0.28	-1.94	-12.50	-12.55	I(1)
LNER	-0.87	-1.96	-4.88	-7.43	-0.66	-1.67	-12.20	-12.79	I(1)
LOPP	-1.99	-2.19	-4.68	-4.65	-1.93	-1.97	-12.00	-11.99	I(1)
LRER	-2.67	-1.25	-3.51	-5.53	-2.64	-0.90	-11.40	-12.53	I(1)
LRGDP	1.52	-5.37			1.37	-4.41			I(0)
LGCE	-0.63	-11.95			-2.64	-11.57			I(0)
CSE	-0.93	-2.38	-1.65	-3.57	1.78	-2.57	-2.43	-4.51	I(1)
CHM	-2.43	-0.76	-14.93	-15.49	-2.30	-0.80	-15.10	-15.50	I(1)
CPI	2.49	-2.14	-1.30	-4.57	7.15	-2.29	-1.40	-11.82	I(1)
GRM	-2.46	-0.90	-15.01	-15.45	-2.37	-0.94	-15.08	-15.45	I(1)
STM	-1.98	-0.73	-3.55	-15.03	-1.91	-0.85	-15.02	-15.16	I(1)
XTR	-2.06	-1.76	-7.73	-7.96	-2.04	-2.02	-13.12	-13.29	I(1)
INR	-1.57	-2.06	-7.30	-7.39	-1.52	-1.98	-12.73	-12.82	I(1)
DTR	-0.29	-1.74	-3.14	-3.08	0.53	-2.08	-9.56	-9.73	I(1)
MIS	-4.54	-6.43			-11.17	-12.09			I(0)

Source: Eviews Result Output, 2021

Note: The ADF and Philip Perron test statistics for the null hypothesis of a unit root process for the variables in the levels and in first differences. The critical value at the 1 percent significance level is 4.05 if a constant and a linear trend (c&t) are included in the regression, 3.49 with only a constant term (c).At the 5 percent significance level these values are 3.45, 2.89 and 1.94, respectively (MacKinnon, 1996). OOI means order of integration.

4.1 Bound Test for Cointegration

Since our variables are combination of I(1) and I(0), the next stage is to examine whether there is cointegration among our variables. As such, the bound testing approach proposed by Pesaran et al (2001) is utilized in this study since its assumption is regardless of whether the variables in the model are I(0) and I(1). The result of then bound test is presented in Table 2. The results indicated that the variables have long run relationship as indicated by the F-statistics of 5.76 which is higher than the upper bound critical value of 1, 5 and 10% respectively. This implies that there is long run relationship amongst our variables.

Table 2. Bound Test for Cointegration

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	5.759910	10%	2.08	3
k	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15
Actual Sample Size	237		Finite Sample: n=80	
		10%	2.303	3.154
		5%	2.55	3.606
		1%	3.351	4.587

4.3 Long Run and Short Run Model

As presented in Table 3, the result shows that our estimated coefficient confirms to a proiri expectations and are as well statistically significant. The result shows that variables in the model tend to move in line with theory which clearly reiterate the importance of NER, IRD, RGDP, OPP and GCE in affecting changes in RER in the long run. The positive sign of GCE indicates depreciation effect of government consumption on RER. For instance, the demand for non-tradable increases with higher fiscal spending. The negative and significant sign indicated by IRD at 1 percent level of significance, implies that a rise in domestic real interest rate relative to trading partner (proxied by US interest rate) will appreciate domestic currency. Openness index OPP is positive and significant, indicating that increase in imports relative to exports depreciate the real exchange rate.

Table 3. Estimated Long Run Model

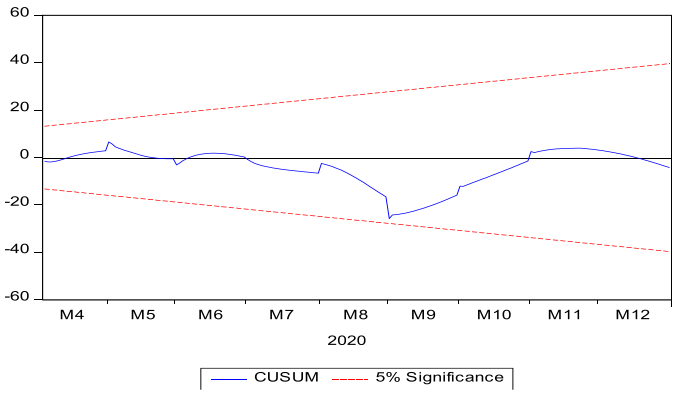
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOPP	0.242210	0.066868	3.622210	0.0004
LNER	-0.131837	0.066041	-1.996290	0.0471
IRD	-0.205763	0.064644	-3.183003	0.0017
LRGDP	-2.075474	0.673849	-3.080027	0.0023
LGCE	0.542436	0.212303	2.555009	0.0113
C	12.83326	4.671558	2.747104	0.0065

In Table 4, we present the result of the short run model which shows that the past values of the dependent and independent variables are statistically significant in determining the real exchange rate RER. The result shows that increase in OPP and government consumption expenditure leads to depreciation of real exchange rate in the short run. Which indicates that government consumption expenditure in Nigeria exert demand pressure on non-tradables causing their prices to increase relative to the price of tradables.

Under the assumption that tradable and non-tradable are substitute and that substitution effect is more than income effect, RER is expected to depreciate in other to switch demand from tradable to non-tradable. Our long run result showed that our variables are rightly signed, however, in the short run, deviation from this relationship could occur due differences in the dynamics governing short run real exchange rate and long run real exchange rate. As such, the short run interaction and the adjustment to long run equilibrium are important. The error correction term enables us to gauge the speed real exchange rate to its long run equilibrium. The result is negative and statistically significant indicating the existence of cointegration among our variables of interest. The stability test shows that our model is stable as indicated by the CUSUM square, other post estimation result shows no serious specification problem.

Table 4. Error Correction Model

ARDL Error Correction Regression				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LRER(-1))	0.109169	0.056553	1.930385	0.0548
D(LOPP)	0.092406	0.010144	9.109629	0.0000
D(IRD)	-0.171872	0.062694	-2.741448	0.0066
D(LNER)	-1.051953	0.069702	-15.09210	0.0000
D(LNER(-1))	-0.097986	0.054546	-1.796398	0.0738
D(LRGDP)	-0.852661	0.126435	-6.743868	0.0000
D(LGCE)	0.195460	0.031090	6.286997	0.0000
ECM_{t-1}	-0.031108	0.004835	-6.434233	0.0000
R-squared	0.653103	Durbin-Watson stat		1.990318
Adjusted R-squared	0.644054			



4.4 Exchange Rate Misalignment and Covid-19 Prevention Measures

The estimated result as presented in Table 5 showed the parameter estimation from Dynamic OLS (DOLS) and 2 Stage Least Square (2SLS) to estimate the impact of COVID-19 and government lock down measures on exchange rate misalignment.The parameter estimation value from both models showed that the stringency measures (STM) from both models indicated that they are positive and significant, this indicates that the stringency measures applied by the government during COVID-19 increases exchange rate misalignment, for instance, 1 per cent increase in stringency measures increase exchange rate misalignment by 10 and 7% respectively in both IV-2SLS equation while it increases by 3% in DOLS estimation.

These measures such as restriction on vehicular movement, restriction on movement of people and social distancing have significant effect over the stability of a countries financial sector. Similarly, overall government response measures (GRM) etc are positive and significantly affect exchange rate misalignment. As an exogenous shock, COVID-19 virus and various containment measures to contain its spread has affected many enterprises, thus

impacting on global supply chain. Ceylan (2020) found evidence that government prevention measures like lockdown affect enterprises and brought about unpredictable loss. Similarly, other studies like Baker et al (2020); Mishra et al (2020) among others found that COVID-19 caused greater stock market volatility. Similarly, Feng et al (2020) find that government containment measures increase exchange rate volatility. According to Sherma et al (2019), the magnitude of exchange rate volatility which increases during shutdown, intensifies financial market risk, increase foreign investment uncertainty. All these exogenous disturbances can increase the variability of the nominal and RER, thus causing the RER to deviate from its trajectory.

Table 5. Instrumental Variable 2SLS and Dynamic OLS Estimation

Dependent Variable	**Exchange Rate Misalignment: MIS**		
Estimator	IV-2SLS		Dynamic OLS
Variable	Coefficients		Coefficients
P(CAS)		0.17**	0.29**
		(0.42)	(0.20)
P(DRT)	2.08		-0.23
	(1.97)		(0.79)
LCHM	−0.09***	−0.12***	− 0.06**
	(0.32)	(0.24)	(0.03)
LESM	0.28	3.26	1.42
	(0.16)	(0.62)	(0.11)
LGRM	0.15***	0.40*	2.85**
	(1.41)	(2.17)	(0.87)
LSTM	0.10*	0.07*	0.03**
	(2.31)	(2.21)	(1.60)
LETR	−1.02***	−0.13***	0.60
	(2.43)	(0.80)	(1.83)
INT	−0.27**	−1.10*	−0.11**
	(0.86)	(2.78)	(0.35)
LCPI	0.05*	0.31**	0.41*
	(2.57)	(1.42)	(1.06)
C	45.33**	22.05*	−18.27*
	(21.41)	(11.24)	(41.50)
Adj. R^2	0.72	0.68	0.55
F-Stat	9.45(0.00)	8.82(0.00)	
Endogeneity Test	5.61(0.00)	6.14(0.00)	
No. of Observation	239	239	239

*The robust standard errors are reported within the parentheses. While *,**, and *** denote statistical significance at 1%, 5% & 10% levels. + denotes the F-Statistic*

Death rate during COVID-19 is positive but not significant in affecting exchange rate misalignment in both DOLS and 2SLS. This result is not surprising, because at the peak of pandemic, death rate due to the virus was not as serious compared to the developed countries where death rate was at the roof top causing devastating effect on financial variables. However, increase in cases of COVID-19 increase exchange rate misalignment as indicated in both regression. According to Zhang et al (2020) the spread of the virus caused unparalleled level of risk in the global financial market, inflicting significant losses on investors. Similarly, Sharif et al. (2020) found increase in volatility in US financial system following astronomical rise in confirmed cases. Also, Gen-Fu et al (2021) found significant increase in exchange rate volatility following a rise in confirmed cases in a panel of 20 countries.

The empirical result for the containment and health measures shows that it is negative and significant for all the regression. This implies that health measures implemented by the government reduces variability in exchange rate. CHM which covers both ordinal and numeric measures includes: testing policy, contact tracing etc. The implementation of health containment measures send signals to investors about government's ability to curb the spread of the epidemic thus, boosting investors' confidence which eventually stabilizes the financial market and curb excessive movement in exchange rate (Huang and Zheng 2020). From the result, 1% increase in CHM decreases exchange rate misalignment by 9 and 12 % respectively in IV-2SLS regression and decreases it by 6% in DOLS regression.

The economic support index (ESI) is not significant in both regression, although they are having different signs. This shows that the result did not support our a priori expectation, as exchange rate misalignment is supposed to decrease with increase in income support program. In other words, the implementation of economic support through appropriate government policy intervention should effectively improve market liquidity which will stem volatility in the financial market.

The post estimation test indicated no serious specification problem in our model. For instance, the weak identification test that check if the instrumental variable have the ability to replace the endogenous variable, our result shows that the F-statistics is higher than the critical values of the Stock-Yogo weak identification test critical values. The endogeneity test indicated that the variable treated as endogenous cannot be exogenous.

4.2 Findings and Policy Implication

For the reason that exchange rate misalignment seems to be sensitive to coronavirus, it is imperative to highlight some policy implications. First, it is essential to examine the crucial link between currency misalignment and the pandemic to provide more information to policymakers. Second, in a crisis such as the Covid-19 pandemic, the Nigerian government and monetary authorities should be able to quickly strengthen the messages and actions that "flattens the curve" will slow the

pace of an exponentially growing pandemic. Third, it is important to put in place both short-term measures to deal with the economic shock and long term post-pandemic efforts to rebuild and restart. These measures will be implemented at the local and national levels. Lastly, it will be important to provide a clear narrative aimed at highlighting the links between the spread of the virus, its causes and consequences, as well as the implementation of economic support through appropriate government policy intervention to effectively improve market liquidity which will stem volatility in the financial market.

5.0 Conclusion and Recommendations

5.1 Conclusion

The present study investigate the impact of the pandemic and government restriction measures on exchange rate misalignment in Nigeria using daily data from 3rd February to 31st December 2020. To transform some of the monthly data set to daily data, we use the quadratic match average. We then apply Two Stage Least Square (2SLS) and Dynamic OLS technique for estimating our result. The estimated values of exchange rate misalignment is derived from the BEER approach. The empirical result shows that stringency measures (STM) applied by the government during COVID-19 period increases the incidence of exchange rate misalignment. Other containment measures like GRM etc are positive and significantly affect exchange rate misalignment. Containment and health measure (CHM) is negative and significant in both regression, indicating that CHM reduces misalignment in exchange rate. Death rate during COVID-19 is positive but not significant in both regression. However, increase in cases of COVID-19 increase exchange rate misalignment as indicated in both regression result. This is not surprising as the containment measures adopted globally to slow down the spread of the virus significantly affected global supply chain.

5.2 Recommendation

The recommendation that stems from this research is that government should put in place both short-term measures to deal with the economic shock and long term post-pandemic efforts to rebuild and restart. These measures will be implemented at the local and national levels. While pandemic prevention measures like social distancing, contact tracing, restriction on internal movement helped in curbing the spread of the virus, it will also be important to provide a clear narrative aimed at highlighting the links between the spread of the virus, its causes and consequences, as well as the implementation of economic support through appropriate government policy intervention to effectively improve market liquidity which will stem volatility in the financial market. This will go a long way in reducing exogenous shocks in the financial system. Thus, reducing the incidence of exchange rate misalignment.

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Network Venture Capital and Gender Gap in Entrepreneurship

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Abstract

This study assessed the existing gender gap in venture businesses using both formal and informal means of venture acquisition particularly as it pertains to women in Nigeria. Linear regression analysis was used in carrying out the analysis based on the responses provided by 103 female SME owners, using questionnaires as instrument of data collection. Findings show a substantial correlation between female involvement in organized social network: a positive relationship between gender stereotype and capital investments and also a link between female entrepreneurs' level of education and innovative skills. It is concluded and suggested that some form of red tapism in venture business such as formal meetings with female business owners should be less formal, more opportunity for female education and skill acquisitions and banks and other venture capitalists should be more obliging to venture businesses instituted by women.

1. Introduction

In venture capital, it is hard to exaggerate the importance of networks. According to Brush, Ali, Kelley & Greene (2017), the venture capital business is extremely interconnected, with both direct & circular connections being critical for deal discovery, transaction syndication, and judgement (Brush et al. 2017). A venture capitalist can make money only if he or she has relationships and networks that allow him or her to see what the futureholds for startups and other venture capital companies (Nanda, Samila, & Sorenson, 2018). The fact that fewer women than men pursue entrepreneurial endeavours is a worldwide phenomenon (Kelley, Bosma and Amoros, 2013). Despite this, the cause of the difference remains unknown. Women and men differ in their fear of failure, attitude towards risks, self-confidence, and willingness to compete (Koellinger, Minniti, & Schade, 2013; Caliendo, Fossen, & Kritikos, 2009; Wagner, 2017)

Women's poor engagement in entrepreneurship, as stated by Alsos, Isaksen, & Ljunggren,(2006); Rosti & Chelli (2005), is attributable to a lack of financial resources. Many Western nations rely on personal savings, debt, government-backed loans or grants known as "soft loans," and equity investment from venture capital firms or "Angel investors" to establish a company (Borch et al., 2002; Foss & Ljunggren, 2006; Jarvis, 2000; Peirien, 2006). Among institutional and government intervention factors, the availability of money, social security, and corporate licencing has the largest influence on the gender gap. Women, it is thought, have a more difficult time getting capital than men. Women also have a more difficult time convincing investors to invest in their businesses (Alsos, Isaksen, Ljunggren, 2006; Rosti, Chelli, 2005).

Women's involvement in Africa's greatest economy has fallen during the prior two decades, according to a 2019 report. In 2018, almost half of all women in Nigeria worked, according to SheTrades: Promoting SME Competitiveness in Nigeria, research from the International Trade Center (ITC) that looked at roughly 400 women-owned or operated enterprises in Nigeria. In comparison to 1990, this was a modest rise. In 2018, more women were working in fields such as registration and certification, banking, skill development, and flexible work settings. Even though just around 13% of working-age women in Nigeria are employed, the Master-Card Index of Women Entrepreneurs indicated that women in Nigeria are particularly enthusiastic about the opportunity to further their careers (73.8 per cent in contrast to 25.3 per cent for necessity-driven). Nigerian women are encouraged by a favourable culture that supports entrepreneurial success, business risk-taking, creativity, and originality, according to the Master-Card Index of Women Entrepreneurs (2019).

1.1 Statement of the Problem

Venture capital should be provided equally to women as it provides to men, so as to facilitate more female entrepreneurs in Nigeria, for economic growth and development to take place beginning from the community level. Despite the fact that entrepreneurship has been acknowledged as the backbone of many economies in both developed and developing countries, gender inequality still exists. A significant proportion of women are still left out and are on the receiving end of rejection as a result of some certain factors such as education, social, homophily, bias investors etc. In Nigeria, equal opportunities for women and gender equality are not fully implemented which has caused a serious problem. There are still notable gap in harnessing talents/potentials between men and women coupled with the fact that a stereotypical view to woman's role in the family exist even today, preventing women to integrate into labor market and start their own business. Even though participation of women in business is constantly increasing, the systematical lower rate of women participation indicates that some differences exist, hence the need for this study to be carried out.

The broad objective of this research is to determine the impact of gender gap on network venture capital in entrepreneurship. The specific objectives are to:

I. Highlight the extent to which female-gender participation in social networking promotes business venture.

ii. Ascertain the effect gender stereotyping exert on capital investment in a business venture.

iii. Identify how the level of education influences innovative skill in business development.

1.2 Literature Review

VC has frequently been vital in the formation of successful companies, acting as a major source of financing for young entrepreneurial enterprises and so contributing significantly to several corporate success stories. Venture capitalists have aided in the establishment of some of the world's most significant businesses, including Federal Express, Google, Genentech, and Apple (Achleitner, Allmendinger, Gerybadze, Harhoff, Luther &Llerena, 2011).

Because of the varying stages of economic growth and the foundations upon which each sector has been created, the development of the VC industry in various nations has taken on diverse aspects. Nonetheless, the transformation of a VC sector requires institutional metamorphosis in every economy (Karaömerlioglu & Jacobsson 2000). Venture capital (VC) is a subcategory of private equity finance that is typically used to invest in startups, early-stage, & developing businesses that have shown considerable growth in terms of employee count, monthly profit, and operational size, among other metrics (Schmitt, Rosing & Stephen, Leatherbee 2017).

Öberg (2018) posits that a business network is made up of directly and indirectly connected individuals (and companies) connected majorly along the social and economic lines. Networks act as a link among entrepreneurs to enable them to share ideas and resources. Reliance on trusted referrals gives opportunity to those whose networks give them better access to investors (Cohen, Frazzini & Malloy 2015).
Entrepreneurship is often viewed as a primary engine of economic growth and development on a worldwide scale. As a result, encouraging and boosting entrepreneurship, particularly amongst small and medium-scale enterprises (SMEs), is an important part of both developing and developed countries' development strategies (Durbin & Conley 2016).

Female-Gender Participation in business

Men entrepreneurs, according to Uwantege and Mbabazi (2015), have greater business experience and dominate the business world. Female entrepreneurs who manage SMEs are critical to constructive economic development because they create employment, stimulate additional economic progress, and capitalise on women's creative potential. Worldwide, there are an estimated 8-10 million formal SMEs owned entirely or in part by women (International Finance Corporation, 2014). Women in cities make the less economic contribution than women in rural areas, owing to the absence of agricultural activity in towns.

According to research that focused mostly on entrepreneurs' informal social networks, female entrepreneurs had a bigger informal social network than male entrepreneurs (Loscocco et al., 2009). On the other hand, women who operate start-up enterprises know fewer entrepreneurs than males. Men, on the other hand, have a larger social network than women, giving them more opportunities, contacts, and expertise. Women are so disadvantageous from the outset, with fewer professional connections, role models, and mentoring chances, all of which may have a negative long-term influence on their business (Global entrepreneurship monitor 2012). Men and women have distinct social networks, and these disparities may have different financial effects (Popielarz 1999).

Education

A large proportion of female entrepreneurs lack basic management skills (planning, organising, leading, and regulating), as well as an understanding of how to communicate with networks and negotiate a fair deal (International Finance Corporation, 2008). Without

adequate training, women-owned businesses will be unable to adapt to globalisation, focus on speed, and deal with a constantly shifting macroeconomic climate (United States Agency for International Development, 2009). Education has a favourable influence on an individual's ability and competence, which are critical for human growth and raising the quality of life, with great advantages to both individuals and society. Investing in the education of women has been accepted as a fundamental right with far-reaching impacts on human development which produces high social and economic returns (UNICEF, 2018).

Gender Stereotype

Because numerous women wish to start their enterprises, cultural prejudices frequently impede them (Kamberidou, 2013). Gender stereotypes have a role in injustice as well as the underestimation of women having business management skills. Women business owners do not have the same access to business possibilities as men. They labour in an environment where they are vulnerable to prejudice, which is one of the causes of their shortage (Tambunan, 2009; Adema et al., 2014). According to Siddiqui (2012), some males feel that assisting women in business is tantamount to pouring money into the fire since women lack the management skills necessary to operate a successful firm. Minniti and Naude (2010) say that prejudice stops women from starting businesses, lowers their income, and lessens their excitement.

They establish and build their enterprises using the resources they have. Their wives have a lot of authority over the firm's finances, even though they produce relatively little money for the company (Osoro et al., 2013). To make males more powerful, most families place a low emphasis on female education. Even though women are starting businesses in higher numbers than males, data reveals that female entrepreneurs face additional hurdles (Becker-Blease and Sohl, 2007). When it comes to obtaining venture funding, for example, it is detected that female entrepreneurs struggle more than male counterparts (Buttner & Rosen, 1988). One of the primary challenges for women-owned firms, according to Brush (1997), and Carter and Allen (2003), is securing start-up financing.

Early-stage finance is thought to be essential for securing entrepreneurial success (Gaston & Bell, 1988; Wetzel et al., 1986). Lack of finance for women-owned enterprises might have far-reaching consequences on their development, performance, and survival (Wetzel et al., 1986). Differences in risk perceptions might be one reason why women get less money than males. Women have a reputation for being more cautious than males when it comes to taking risks (Schubert, Brown, Gysler and Brachinger, 1999). As a result of this notion, women's ability to make high-risk judgments has been questioned (Shubert et al., 1999).

Social Network

The obvious reasons why entrepreneurs are not driven by financial gain is because the process of establishing a firm or becoming an entrepreneur is heavily reliant on social networks (Stevenson, 1984). People who start businesses are always looking for new ways to grow them, and they can only do this by taking advantage of chances that come their way. One way to find and take advantage of opportunities is to use one's social network, which is a complete list of all types of relationships between a group of people (Brass, 1992). Individuals' or businesses' economic action/behaviour is entwined with social interactions (Granovetter, 1985). Aldrich and Zimmer (1986) present a different understanding of entrepreneurship, one in which it is rooted in networks of ongoing social relationships. Entrepreneurship is either promoted or restricted by links between entrepreneurs, resources, and opportunities, according to them, via this intricate network of relationships. One of the most important advantages of networks for people is the access to information and guidance that is required for the construction of an institution or a corporation (Freeman, 1999).

Capital Investment

When a company spends money on something like land, equipment, or buildings, this is called "capital investment" (Ward 2021). Cash, assets, or loans could be used to pay for the project, but they could also be used. Businesses may not be able to start if they do not have enough money. You can learn more about how a capital investment works and how it affects the economy by reading this text.

In the corporate world, capital investment has two consequences. To begin, capital investment refers to a company's expenditure on long-term assets such as land, equipment, or buildings. (2017, Purdue University) Second, Investment Capitsl is known as the cash investment made to acquire sustainable assets rather than pay day-to-day operating costs (Texas Southern University, 2020).

A company's capital investments are often motivated by three factors:

- To raise funds for the company's expansion, such as by boosting production, developing new goods, or adding value.
- Utilizing current technology or equipment or industrial breakthroughs to increase efficiency and save money (Purdue University, 2017).
- Things that have outlived their usefulness are replaced for instance, an increased mileage delivery van.

Investment of Capital is generally seen as a critical indicator of the economy's overall health. When a company spends on capital, it shows that it is optimistic about the future & wants to grow its business by boosting productivity.

In contrast, recessions are typically accompanied by a decline in firm capital investment.

(i) Capital-Intensive Businesses

Labor, facilities, and equipment, as well as maintenance and upgrades, are all areas where capital-intensive enterprises must spend heavily (University of Michigan, 2021). Rail firms are famously capital-intensive, requiring continuous modifications to lines, train equipment, and infrastructure. For example, in 2016, CN Rail announced a $2.9 billion capital improvement plan for the year, including $1.5 billion for track infrastructure projects such as rail, ties, and other track materials renewal, bridge renovations, and branch line enhancements. Other investments were made to increase traffic volume, reduce fuel use, and improve service (Canadian National Railway, 2016).

Even modest enterprises might need a lot of funding. Bulldozers, backhoes, and trucks, for example, would be too expensive for a small earthmoving or landscaping business. Capital expenditures may vary dramatically year over year for a variety of reasons, including the financial health of the organization, the economic cycle, and one-time expenses such as natural disaster-related emergency spending.

(ii) Non-Capital Intensive Businesses

It might interest you to know that non capital intensive businesses do not require cash investment to keep up. Examples of non-capital intensive businesses include consulting business, creation of software, finance, or online businesses. These businesses does not require intense structure or equipment to be ploughed into the business (Ward, 2020).

Venture Capital Investment

Venture capital is a very good way to help new, creative businesses that can't get money from traditional sources. VCs should invest not just in finance, but also in constant monitoring and value-added help for expanding businesses.

As a result, venture capitalists are different from traditional bankers when it comes to how well they can deal with complicated information and uncertainty problems that arise during the investing process (Salhman, 1990; Gompers and Lerner, 2001). For two reasons, people were apprehensive about venture capitalists' involvement in the start-up & research & development of new businesses:

(1) Are venture-backed enterprises more innovative and successful than non-VC-backed firms?

(2) It is possible that venture capitalists can help start-ups come up with better ideas before they invest in them, or they can keep an eye on and push the businesses to improve their execution after they have been invested.

In recent years, a lot of people have been interested in how venture capital investment can help small businesses get off the ground. Kortum and Lerner say that venture capital activities made people more likely to want to patent new ideas based on industry-level data (2000). Furthermore, Hellmann and Puri (2000) found that entrepreneurial companies in Silicon Valley were more likely to be chosen by venture capitalists if they were more creative than if they were just copycats.

People who study venture capital say that it is important for new businesses to get help from venture capitalists. This helps them become more professional and grow. Puri (2002) discovered that venture capitalists assist in the development of human resource strategies as well as the execution of strategic management decisions. Venture capital-backed firms expanded faster than non-VC-backed enterprises, according to Puri and Zarutskie (2012). Furthermore, the authors observed that businesses that get venture capital are less likely to collapse within the first four years after obtaining it. They compared venture-backed and non-venture-backed enterprises in terms of total factor productivity, which is how much work each company accomplishes with all of its elements, using census data from the United States of America (TFP). Venture capital-backed businesses tend to be more productive than businesses that don't have venture capital. It took the VCs a long time to check out the businesses before and after investing in them.

Several studies have been undertaken on the function of venture capital in the initial public offerings of entrepreneurial businesses (IPOs). They discovered an eclectic array of relics. They suggest that initial public offerings sponsored by venture capital are more likely to be devalued than those supported by other investors. Barry et al. (1990) and Megginson and Weiss (1990) similarly make this assumption (1991). This is what they found out. Five years should have venture capitalists back your first public offering than it is to have venture capitalists back your first public offering who aren't. This is what Brav and Gompers say (1997). A study done by Bradley and Jordan in 2002 found that, when they took into account the quality of the company and the investors, there was no difference between venture capital-backed public offerings and those that were not.

Innovation

The process through which a person ventures to create brand new things, ideas, and processes, or to approach current products, ideas, and processes in novel ways, is referred to as innovation. There are several forms of innovation available in the business sector for a corporation to pursue (Purcell, 2019).

Innovation can be embraced if company executives be able to incorporate innovation and creativity into their business strategies to stay relevant in changing trends and separate themselves from the competition. However, being ready to innovate is not the sole key to success; a full understanding of how to put that idea into reality is essential for organisational progress.

This may be accomplished through obtaining experience working on interesting, demanding, and creative projects, which will allow you to develop the required abilities to become an industry innovator. A master's degree in innovation is designed to hone these abilities while also providing hands-on, real-world experience that will help you become a more successful and constructive innovator (D'Amore-Mckim School of Business, 2021).

Financing Innovation in Small and Medium Enterprise
Because the old ways of financing commercial ventures did not work, new ways must be used (Aruwa, 2006). The new techniques pointed out that small and medium-sized businesses are very vulnerable, and that they need financing schemes and products that are tailored to them (Aruwa, 2006). These are some of the techniques:

i. Venture Capital

Venture capital is money that is invested in a business when it is still very new. It comes from non-bank financial institutions, wealthy individuals, or businesses that work together. It comes in the form of stock and easy equity. It fills a need caused by conventional banks' reluctance to offer credit facilities. The funds may be granted initially as a loan, but only to convert the borrowed cash into stock later in the firm. To compensate for the significant risk, the return on such an investment should be substantial.

ii. Equipment Leasing

In today's economy, the high cost of equipment makes it hard, or even impossible, to buy new things outright. As a result, leasing is a very important way for businesses to get money. It has a lot of benefits for both lessees and lessees. With the difficulties of getting a bank loan because of collateral or security, leasing is a good option because the leased equipment serves as collateral in the leased contract, which allows for a flexible payment schedule from the start of the contract, which helps with working capital.

iii. Small and Medium Scale Industries Equity Investment Scheme

In this case, the bankers' delegation has taken the lead. Commercial & merchant banks have committed to investing 10% of their yearly pre-tax profits in small & medium enterprises. This is a promise they intend to keep (SMEs). This kind of financing structure is meant to cut down on the costs of loan services for businesses while also making money for the bank's managers. This, in turn, leads to a lot of job creation and new technology development, among other things.

iv. Clusters

Clusters are groups of businesses that are close together in terms of geography and section. They want to maximise outside economics from their efforts and improve efficiency and competitiveness through the acquisition of technological skills and the use of common infrastructures, like electricity, water, communication, and schools.

v. Sub-Contracting Linkage with Large Enterprise

Subcontracting arrangements enable SMEs to have their commodities absorbed by the intermediate products of larger enterprises, so creating a ready market. By contributing trade financing, technical support, and low-cost research and development aid, these bigger corporations display an interest in the success of SMEs. For SMEs with a strong credit history, trade credits are the most cost-effective method of finance. It might be possible for the trade creditor to give you free money for a period of 30 to 180 days or more, depending on the terms of the deal.

1.3 CONTEXTUAL REVIEW

Gender Gap in women's entrepreneurship

Both developed and developing countries have seen a growth in female entrepreneurs (Levent et al., 2013; Uwantege & Mbabazi, 2015). Both men and women should be allowed to pursue entrepreneurial endeavours, and both should be lucrative. Men have greater chances than women since they control the business (Alam et al., 2012; Warth & Koparanova, 2012). According to Fisk and Thébaud, women are more likely to start informal businesses such as microenterprises or small businesses like retail and service (2015). Male entrepreneurs are more likely to create new items and ideas than female entrepreneurs.

The dominant culture in Nigeria still thinks that a male should be solely responsible for his family's wealth. Women are discouraged from seeking business possibilities because of this oppressive mindset (Blackden et al., 2011). In terms of entrepreneurship,

gender inequality puts women at a disadvantage (Chinomona & Maziriri, 2015). According to Schwartz et al. (2009), entrepreneurship has been considered a male activity in Rwandese culture for many years, which is why women have not participated more in commercial operations.

To establish a company, married women must first get authorization from their partners (Cutura, 2014). Male individuals are more likely than female entrepreneurs to obtain financing (Thébaud & Sharkey, 2014). Lenders take gender into account when reviewing loan applications for beginning money as well as funding for growing businesses. Simply because they are women, women entrepreneurs do not have appropriate access to capital (Meyer, 2009). According to Nxopo & Iwu (2015), the South African agencies set up to encourage entrepreneurship benefit male entrepreneurs more than female entrepreneurs. Male entrepreneurs are preferred by networks (Thébaud & Sharkey, 2014).

Gender Gap in entrepreneurship

In the sphere of new and innovative firms, the gender gap is critical. This has caused women founders to not only be an exception but generally face more challenges in the quest for investment capital.
When problems can't be solved conventionally, new and innovative ideas are put in place. The more elastic and diverse the techniques are, the easier it is to find a satisfactory solution. This has enabled companies with gender diversity in their teams to become more successful and above all more flexible. This has been revealed in a study by the Boston Consulting Group (BCG) (2014) stating that the global market economy would increase by 3% to 6% if women were to become entrepreneurs to the same extent as men.

Network Venture Capital

Because the sector is so well-connected, venture networks have limitless characteristics. Even though venture capitalists can predict how a business will do in the future, which increases their chances of making good investments, VC sectors with a good track record oversee and analyse a lot more projects. In the long run, this "access channel" could be very important in sustaining the differences in performance between venture capital companies (Nanda et al., 2018). One big problem for women is that venture capitalists and founders are mostly men on both sides. This is because of the way social networks are divided by gender, ethnicity, and socioeconomic class. This implies that women face a significant disadvantage in a male-dominated business on both sides (McPherson, Smith-Lovin, & Cook, 2001).

Women have an advantage over men in things like bargaining because they do not have as many connections to important networks that can help them learn and get help (Tinsley & Ely, 2018).

According to a follow-up study, men get more out of their social networks than women do. Regarding the fact that men, as well as women, have an equal number of links to their schools, males are somewhat better at anticipating the success of the industries they represent as well as the corporate boards to those they are related, as per Fang and Huang (2017). Males can get more benefit from their networks when it comes to investment performance and how the outside world sees them because network ties improve the accuracy and impact of all analysts' predictions and suggestions (Fang & Huang, 2017).

Finally, VCs value relationships and networks not just for transaction flow, but also for gaining entry to and success inside the organisation. Women are also disadvantaged in these areas. Women are also disadvantaged in terms of access to knowledge simply because there are so few other women in venture capital (Bohnet, 2016). An ambitious female venture capitalist has much fewer examples to learn from than a male counterpart when it comes to deciding how to be successful at investing. As a result of the dearth of role models, women are socially and mentally disadvantaged (Bertrand & Duflo, 2016). It is vital to remember that merely increasing the number of women in the VC business will not fix the issue if they are not integrated into existing information and relational networks.

1.4 EMPIRICAL REVIEW

Geiger (2020) investigated the gender gap(s) in venture capital financing using a comprehensive study. The study's goal is to examine a review of the empirical literature on the gender-funding relationship. The research was split into two theories. *Hypothesis 1:* There is a varied relationship between entrepreneurial gender and funding results depending on the financing circumstance. *Hypothesis 2:* The gender of an entrepreneur is connected to the industrial sector and the size of the company, which is related to the amount of investment required. Hypothesis one is investigated using the metaphor package, whereas hypothesis two is investigated using meta-analytic structural equation modelling.

The Eggers linear regression (Egger et al 1997) approach was applied to a random sample of a large population, with the results revealing that the relationship between entrepreneur gender and capital required was entirely reconciled by firm size and industrial sector. This result is consistent with what gender socialisation and an entrepreneurial mindset could suggest. The findings of the reconciliation show that female entrepreneurs need less capital for their projects, resulting in lower funding quantities but higher funding success. As a result, there is a gender disparity in terms of financing amount that disadvantages female entrepreneurs and a gender

disparity in terms of funding amount that benefits female entrepreneurs (funding success).

They conducted a study on the gender disparity in venture capital financing in the United States (2021). If a gender mix affects financing decisions and the gender gap in entrepreneurial funding, this study will try to figure that out, too! People who study the popular American TV show Shark Tank looked at 4,893 meetings from the show to see if the gender compatibility of the entrepreneurs made investors more likely to give them money or not. Even though male investors have no long-term gender prejudice, female investors are 30 percent more likely than male investors to collaborate with female businesses. Businesses that make products that aren't dominated by men, but aren't made by men, will see this. This is why I did this. To improve the estimates several control parameters (like asking price, investor, and season-fixed effects) are used, as well as several specifications. This makes them more accurate.

Kathryn and Katica (2020) investigated how corporate venture capital may help entrepreneurs overcome the gender gap. Its goal was to see how corporate venture capital might help entrepreneurs close the gender gap in the post-pandemic (COVID-19) period. Secondary data was acquired by statistical analysis of women who were sponsored by the VC business in the United States utilising grouping-based sampling. Women-led businesses received less than 3% of all venture capital financing in 2019, more than 90% of all decision-makers at VC firms were males, and although accounting for 39% of all company owners, women only accounted for 4% of total revenue. There is still a long way to go, according to the results. For example, Black women make up just 0.2 per cent of all venture-backed founders, fewer than 4% of VC firms, with almost none of them in charge, and only 3.5 per cent of female company owners. As a result, it is incorrect and difficult for company owners. In the entrepreneurial ecosystem, gender equality is a vastly underutilised resource.

In his paper "The Effect of Social Network on Women Entrepreneurs in Nigeria," Oke (2013) proposed: Ado-Ekiti Small Scale Enterprise Case Study Small enterprises are critical to practically every country's economy. Women entrepreneurs are seen as the new source of economic development and advancement in underdeveloped countries. The goal of this study is to see how social networks in Ado-Ekiti, Ekiti State, Nigeria, affect the growth of businesses run by women. Non-parametric statistical methods are used to test the hypothesis and look at the data, as well. The Chi-square test and descriptive statistics were used in the independent study. According to the research, there are significant linkages between company success and social networks. The research goes on to indicate that family and friends made up the majority of the group's social network.

2 ANALYSIS AND DISCUSSION

The data were obtained from 103 women-based enterprises in Enugu state, Nigeria, and the study was conducted utilizing a linear regression technique of analysis. The questionnaire, which was utilized as a data collecting tool, was used to generate the responses of the respondents. The device was created with the study subject in mind. To establish if there was a significant association involving the independent and dependent variables, ANOVA and correlation analysis were utilized.

Bivariate Correlations

Pearson Correlation	.615**	1
Sig. (2-tailed)	.000	
N	103	103
**. At the 0.05 level, the correlation is important (2-tailed).		

Source: SPSS version 25

The results of a bivariate correlational study done to investigate the influence of the gender gap on entrepreneurial network venture capital are summarized in the table above. On the 2-tailed test (0.00), the correlation in the response was significant at the 0.05 level, indicating a strong association between the two variables.

Model Summary

Model	R	R Square	Adjusted R Square	Std. The error in the Estimate
1	.685[a]	.574	.140	1.22231

Predictors: (Constant), You socialize more with business partners and you give more than 18 hours of your time to ensuring business growth and sustainability.

Source: SPSS version 25

The dependability of the relationship between female-gender involvement as well as social networking in such a commercial endeavor has a significant effect at R= 0.685, as shown in table above. Using social media to reach out to investors to raise money for your business is more reliable if you spend more time with your business partners. Because the coefficient of determination, R2, is 0.574, only 57.4 per cent of the variations have a significant influence on female involvement in a commercial endeavor due to social networking.

ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	26.209	1	26.209	17.542	.000[b]
	Residual	150.898	101	1.494		
	Total	177.107	102			

a. Dependent Variable: Using social medium to reach out to your financial investor to raise capital for your business increase your chances for funds for your business.

b. Predictors: (Constant), You socialize more with business partners, You give more than 18 hours of your time to ensuring business growth and sustainability.

Source: SPSS version 25

F statistics' =17.52 is obtained by dividing the Mean Square Regression (26.209) by the Mean Square Residual (1.494). The table shows that utilising social media to reach out to a financial investor to get finance for your firm increased your chances of acquiring funding by a statistically significant amount (Sig =.000). p.05. R=0.574, R2=.685, F=17.52; "There is no significant relationship between female-gender participation and social networking in a business venture" the null hypothesis was rejected. As a consequence, the null hypothesis is shown to be false. This suggests that there is a substantial correlation between female involvement and organized social networking.

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.445	.343		4.218	.000
	You socialize more with business partners(Q7)	.512	.123	.385	4.168	.000
	You give more than 18 hours of your time to ensuring business growth and sustainability (Q8)	.002	.091	.002	.019	.985

a. Dependent Variable: Using social medium to reach out to your financial investor to raise capital for your business increase your chances for funds for your business

Source: SPSS version 25

The table above shows the extent to which female-gender engagement has an impact on social networking in a commercial enterprise, as well as its importance. B; =0..512, Q8; =0.002; t=4.168, 8.239 is the statistical outcome. The statistical result implies that the reliability of female-gender participation is a significant predictor of the level of social

networking in a business venture.
Linear Regression Model is given as Y = α + βX
Where Y denotes social networking in the context of a commercial endeavour.
α = constant
βx = Coefficient of X
Therefore;
Social networking in a business venture= 1.445 + .512Q7
Social networking in a business venture= 1.445 + 0.002Q8
The significant level for the item is less than 0.00, based on the findings from the ANOVA table above. The null hypothesis "There is no substantial association between female-gender engagement and social networking in a business endeavour" is therefore rejected. As a result, it is believed that there is a considerable association between female involvement and social networking in a company enterprise.

Test of Hypotheses
Hypothesis two
.Restatement of the hypothesis in null and alternate forms

H0: There is no significant relationship between gender stereotypes and capital investment in a business venture.
H1: There is a significant relationship between gender stereotypes and capital investment in a business venture.

Bivariate Correlations

Pearson Correlation	.585*	1
Sig. (2-tailed)	.041	
N	103	103
*. The connection is significant at the 0.05 level (2-tailed).		

Source: SPSS version 25

A bivariate correlation study was undertaken to examine the influence of gender stereotypes on capital investment in a business endeavour, as shown in the table above. On the 2-tailed test, the correlation on the response was significant at the 0.05 level (0.04) Our responses form and demonstrate a strong association between gender stereotype and capital investment in a business endeavour, indicating that neither answer is normally distributed, as shown by the Pearson correlation. As a consequence, there is a substantial correlation between gender stereotypes and corporate capital expenditure. (p>0.001), according to our results.

Model Summary

Model	R	R Square	Adjusted R Square	Std. The error in the Estimate
1	.789[a]	.622	.614	.84169

a. Predictors: (Constant), Gender bias on the part of your investor hindered you from getting your first venture fund for your business. Customers patronize you more because you are a female business owner.

Source: SPSS version 25
The table above shows that there is a significant relationship between the dependability of a gender preconception and capital investment in a commercial endeavor (R= 0.789). According to the table, the R square (R2) coefficient of determination is 0.622, indicating that is an excellent pick between Gender bias on the part of your investor hindered you from getting your first venture fund for your business and Customers patronage as a business owner (Your principal investment in your firm came from family/friends) for just 62.2 per cent of variants having a substantial impact on gender stereotype and capital investment in a business endeavor.

ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	116.592	2	58.296	82.287	.000[b]
	Residual	70.845	100	.708		
	Total	187.437	102			

a. Dependent Variable: Your major investment in your business came from family members /friendsb. Predictors: (Constant), Gender bias on the part of your investor hindered you from getting your first venture fund for your business & Customers patronize you more because you are a female business owner.

Source: SPSS version 25

The F-value is calculated as shown in table above its by dividing the Mean Square Regression (58.296) by the Mean Square Residual (0.708). (82.287) According to the table, Your investor's gender prejudice prevented you from obtaining your first venture funding for your firm and Customers patronise you more because you are a female business owner are statistically significant (Sig =.000). An F-value of 82.287 means that the null hypothesis: "There is no relationship between gender stereotypes and capital investment in a business venture. This implies that there is a connection between gender stereotypes and financial involvement in a company venture.

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.418	.258		20.972	.000
	Customers patronize you more because you are a female business owner.	.009	.084	.007	.109	.914
	Gender bias on the part of your investor hindered you from getting your first venture fund for your business	1.014	.079	.789	12.827	.000

Linear Regression Model is Y = a + βX

Y = Innovative skill of business owners

a = constant

βx = Coefficient of X

Therefore;

Capital investment in a business venture= 5.418 + 0.009 Q7

Capital investment in a business venture= 5.418 + =-1.014Q8

The significant level for the item is less than 0.00, based on the findings from the ANOVA table above. As a consequence, the null hypothesis must be rejected: "There is no substantial association between gender stereotype and capital investment in a commercial endeavour." As a result, the null hypothesis is ruled out. This implies that there is a connection between gender stereotypes and financial involvement in a company venture.

Hypothesis three

Restatement of the hypothesis in null and alternate *forms*

H0: There is no significant relationship between the level of education and innovative skill of a female business owner.

H1: There is a significant relationship between the level of education and innovative skill of a female business owner.

Hypothesis three indicates to the question of new ideas being formed as a result of competition from others to gain 'favour' from your venture capitalist and the level of formal education has on identifying a business opportunity.

Bivariate Correlations

Pearson Correlation	.375**	1
Sig. (2-tailed)	.000	
N	103	103

** At the 0.05 level, correlation is statistically significant (2-tailed).

Source: SPSS version 25

Model Summary

Model	R	R Square	Adjusted R Square	Std. The error in the Estimate
1	.611[a]	.574	.361	1.05861

a. Predictors: (Constant), I saw a business opportunity because of my level of formal education and I saw a business opportunity because of my level of formal education.

Source: SPSS version 25

The table above shows a significant relationship at R= 0.611. It indicates the dependability of a business owner's degree of education and his or her inventive abilities. The coefficient of determination R square (R2) = 0.574 in the table, suggesting that the dependability of formal educational level has an impact on the development of an organisation and the level of formal education benefited you in recognising business possibilities are both high. New ideas created as a consequence of rivalry from others to acquire 'favour' from your venture investor accounted for just 57.4 per cent of variables having a substantial effect on a company owner's degree of education and inventive capability.

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	66.867	2	33.434	29.834	.000
	Residual	112.065	100	1.121		
	Total	178.932	102			

a. Dependent Variable: New ideas formed was as a result of competition from others to gain 'favour' from your venture capitalist.
b. Predictors: (Constant), Your level of education has an impact on the expansion of your business and level of formal education impact on identifying business opportunities
Source: SPSS version 25

The F-value is calculated as described in Table 4.4.2b by dividing the Mean Square Regression (33.434) by the Mean Square Residual (1.121). (29.834) The table shows that the level of formal education influenced firm's development and formal education aided you in spotting business possibilities, are statistically significant (Sig =.000). At R= 0.611, R2= 0.574, F=29.834; p.05., the null hypothesis "There is no significant link between the amount of education and inventive talent" should be rejected.

Linear Regression Model is Y = a + βX
Y = Innovative skill of business owners
a = constant
βx = Coefficient of X

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.357	.310		7.594	.000
	Your level of formal education helped you identify business opportunities (Q15)	.374	.079	.374	4.724	.000
	Your level of education has an impact on the expansion of your business (Q13)	-.440	.072	-.483	-6.098	.000

a. Dependent Variable: New ideas formed was as a result of competition from others to gain 'favour' from your venture capitalist.

Therefore;

Innovative skill of a business owner= 2.357 + 0.374 Q15
Innovative skill of a business owner= 2.357+ 0.440Q13

The significant level for the item is less than 0.00, based on the findings from the ANOVA table above. As a result, reject the null hypothesis that "there is no significant relationship between the level of education and a business owner's innovative skill." As a result, it is believed that there is a considerable link between a company owner's degree of education and his or her capacity to innovate.

4.0. CONCLUSION

In conclusion, according to research done on female-owned enterprises in Enugu state using a basic linear regression technique, there is a high association between network venture capital and the gender gap in entrepreneurship. Women-owned start-ups and established businesses would benefit the economy and stimulate social and economic growth if they actively engaged in social networking to reach out to venture capitalists rather than being limited to little or no finances at their disposal to build up businesses.

Loans and venture funds should be given out to more females with standard and feasible business ideas rather than wait for a male counterpart who might have a less feasible idea but because of his masculinity, he is considered to be more qualified for startup funds and capital for business continuity. Shattering the gender stereotype of capital investors would be by generating new ideas through business experience or an adequate educational background. Women, from young age should be provided with making financial decisions for themselves, given the opportunity to learn a skill while acquiring formal education to the highest tertiary level especially in regions that are less developed or see their women to be a 'trophy' being. Venture Capitalist should be able to meet with female who are willing and able to carry out business plans and venture into business with them without any red tapism or gender bias. Notwithstanding, there are some observed recommendations given for further research.

5.0. RECOMMENDATION

From the study, it can be gathered that the financial institutions in Nigeria most especially, are less interested in Venture business or venture capitalist firms. As a result, banks should recognise that there is tremendous room to grow SME loan volumes, as well as the need of recognising that women-owned SMEs, in particular, are an underserved yet valuable customer sector.

Also, the financial institutions should acknowledge that women-owned businesses have different ways of approaching financial decisions, therefore there is a need to develop a business proposition that provides specifically to the women-owned SME business premise, because a well-planned business offering for women will not only increase their financial access, but it will also contribute to the financial institution's long-term business sustainability. Therefore there is a need to provide the financial institutions such as banks, with reliable measures on the numbers of women-owned SMEs, the challenges they face, and the magnitude of their credit gap in the countries they operate which will in return, help towards reducing the challenges women face to grow their enterprises and to realize their capabilities as economic drivers.

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Impact of Financial Deepening on Nigeria's Manufacturing Sector (1981-2019)

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Abstract

This paper examines the impact of financial deepening on the Nigerian manufacturing sector from 1981 to 2019 using autoregressive distributed lag (ARDL) approach. The manufacturing sector performance measured by manufacturing output as a ratio of GDP was regressed against two major proxies of financial deepening in a two differently specified models tagged institutional-based and market-based models, with a view to comparing and identifying the most effective in Nigeria. In view of this, financial deepening was measured by private sector credits as a ratio of GDP for the institutional based model, while market capitalisation as a ratio of GDP was used as proxy for the market-based model with manufacturing capacity utilisation and interest rate as control variables. The ARDL results reveal that the two measures of financial depth and capacity utilisation have positive and significant impact on manufacturing output. However, the institutional-based development of the Nigerian financial system has greater influence on the manufacturing sector than the market-based development. It is therefore, recommended that government and other relevant stakeholders should implement and strengthen policies that will further expand the depth of the financial institutions and markets with a special focus on the financial institutions. Finally, there is the urgent need to provide enabling environment for efficient utilisation of the excess capacity in the manufacturing sector to increase its performance and contribution to the national output.

Keywords: *Financial Deepening, Manufacturing Sector, ARDL Model and Nigeria.*

Introduction

The indispensable role of financial development in achieving sustainable growth and development among nations cannot be overemphasised. Thus, Nigeria in 2007, launched the Nigerian Financial System Stability (FSS) 2020 strategy with the goal of making the country a financial hub of Africa in line with the vision 2020 (Soludo, 2007). This is premised on the understanding that a well-functioning financial system stimulates national output through a cost-effective capital accumulation and technological progress. It ensures adequate mobilisation of funds and produces information about investment opportunities, which facilitate inflow of foreign capital (World Bank, 2021). Thus, the World Bank developed four comprehensive proxy variables (financial depth, access, efficiency, and stability) for measuring and comparing level of financial development among nations (World Bank, 2021). One of the most researched among these proxies is the financial depth or deepening.

Financial deepening simply means increase in depth, and efficiency of financial institutions and markets coupled with a broader access to banking and other financial services (Dabla-Norris, 2012). It is an increase in a country's asset (like broad money or credit to private sector) as a ratio of gross domestic product (CBN, 2019). Financial deepening makes available credit for investment and consumption, shocks that have direct bearing on the real sector and national output (Ibrahim & Alagidede, 2016). Since the commencement of the FSS 2020 strategy, the Nigerian financial system has witnessed tremendous growth in terms of payments system infrastructure (Real-Time Gross Settlement (RTGS) System, Automated Clearing House (ACH), etc.) and fund mobilisation to real sector (e.g. Banks, Central Security Settlement System, Nigeria Inter-Bank Settlement System, among others).

In 1997 for instance, credit to private Sector was approximately N316bn representing 10.05 per cent of the GDP. It rose to N3.67trn in 2007, which was 15.54 per cent of GDP and in 2019, the figure rose to N24.92trn, representing 23.75 per cent of the gross domestic product (CBN, 2019). These are indications of a sustained rise in the depth of the Nigerian financial system, which are expected to positively influence the real sector, particularly the manufacturing sector that has been prioritised in the on-going quest for economic diversification. This is due to the sector's multiplier link with other different sectors of the economy (Adeyemi & Olufemi, 2016).

Despite the multiplier effect of the manufacturing sector, its performance in Nigeria has been unimpressive. In 1982, the sector contributed 11.77 per cent to GDP, but fell to 8.34 per cent in 1994 and further slumped to 6 per cent from 1998 up to 2011

(CBN, 2019). In fact, from 1983 to 2019, the contribution of manufacturing sector has remained a single digit (CBN, 2019). This has been attributed to high importation of finished goods and low financial support (Obamuyi, Edun, & Kayode, 2012; Omenyi, 2017). The real benefits of a financial market to an economy are said to depend on the stability of its financial system (Bats & Houben, 2017). Though, since the commencement of the FSS 2020 in 2007, the level of the financial deepening in Nigeria has been above 20 per ent but the contributions of the manufacturing sector to the national output remained below 10 per cent (CBN, 2019). This call for an investigation into the pattern of the relationship between financial deepening and the manufacturing sector performance in Nigeria.

Although, a lot of evidences exist on the positive link between the depth of financial sector and manufacturing output (World Bank, 2021; Mesagan, Olunkwa, & Yusuf, 2018; Ebi & Nathan, 2014). Others have argued that the relationship is rather negative (Adeyemi & Olufemi, 2016; Aiyedogbon & Anyanwu, 2015; Udoh & Ogbuagu, 2012). Asaleye, Adama and Ogunjobi (2018), on the other hand, found no evidence to support any significant link between financial deepening and manufacturing output.

In addition to the conflicting empirical evidences documented in the literature, majority of the previous studies focused on the institutional aspect of the financial system development whereas, a well-functioning financial system has four dimensions (i.e., financial depth, access, efficiency, and stability) which are then measured for the two major components in the financial sector, namely the financial institutions and financial markets (World Bank, 2021). Therefore, a typical financial system consists of both the institutions and markets. Each of these (though not mutually exclusive) has its own peculiarity and influence on manufacturing output. Hence, the need to study their impacts individually.

It is against this background that the paper examines the impact of financial deepening on the performance of the manufacturing sector from both the institutional and the market perspectives, using a more suitable econometric technique. The goal is to better understand the nature of their relationship, compare the respective impact of two financial development measures and identify the most effective one influencing manufacturing sector performance in Nigeria. To achieve this goal, this paper is divided into five sections, including this introduction. Section two captures the literature review, which involves theoretical and empirical review, while Section three contains the research methodology. The findings are presented and discussed in Section four, while the summary, conclusion and recommendations are presented in Section five.

2. Theoretical Framework and Literature Review

2.1 Theoretical Framework

The theoretical underpinning of the impact of financial sector on the real sector output can be traced to the new growth theory popularly known as the endogenous growth model (Omolara & John, 2016; Ahuja, 2015). The model introduced technological change as an endogenous factor into the neo-classical production function as indicated in equation 2.1:

$$Y_{it} = F(K_{it}, N_{it}, A_t) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 2.1$$

From the model, aggregate output Y_it depends on stock of capital K_it, labour N_it and Technology A_t. Romer (1986) pointed that the technological progress is either derived by the deliberate investment in research and development to solve existing problems (e.g., productivity) or as an accidental by-product of investment activity by a firm. The said investment is financed through financial sector. They further added that the production function of a firm exhibits constant return to scale for all input. However, there is an increasing external return to scale resulting from technological improvement. This is because individual firm does not capture all the benefits of its increase in capital stock, it also creates benefit which are external to the firms (Romer, 1986).

The external return to scale from a technological improvement is said to be determined by rate of investment (Δk/y), size of capital stock (K) and stock of human capital (N). Since savings equals investment, an increase in saving rates will increase investment rate and will cause a permanently high growth rate in output. (Scott, 1992; Ahuja, 2015). In conclusion, as a firm finances its technological investment through the financial sector, the benefit of the investment spread across the industry through increasing external economies of scale and thus, brings a sustained increase in the overall industrial output.

In addition to the endogenous growth model, the two theories explaining the roles of the financial sector development on the real sector output are the bank-based (institution-based) financial development theory and market-based financial development theory. The three positive roles of banks in promoting economic growth according to the bank-based theory are: the acquisition of relevant information from firms and managers to improve capital allocation and corporate governance (Diamond, 1984). Secondly, is managing cross-sectional, intertemporal and

liquidity risk to enhance investment efficiency and economic growth (Bencivenga & Smith, 1991). Lastly is the efficient capital mobilisation for economies of scales (Sirri & Tufano, 1995). Since banks are coalitions of coordinated investors, they are better in monitoring firms and reducing post-lending moral hazard than the uncoordinated market (Boot & Thakor, 1997). Therefore, the development of the financial institution induces more growth in national output than the development of the financial markets.

The above views were, however, criticized by the proponents of the market-based theory (Gerschenkron, 1962; Levine, 1991; Wenger & Kaserer, 1998). They argued that powerful banks can obstruct innovation through information asymmetry to protect the well-established firm with strong bank-firm ties to the detriment of other firms in the industry (Wenger & Kaserer, 1998). They added that powerful banks with few regulatory restrictions may conspire with firm managers against other creditors and imped corporate governance, which in turn, affects the overall performance of the industry and the economy at large (Rajan & Zingales, 1998). Instead, they stressed the need for a well-functioning market that will enhance economic growth by providing adequate liquidity, enhancing corporate governance and making it easier to tie managerial compensation to firm performance and facilitates risk management (Levine, 1991).

They concluded that market would reduce the inherent inefficiencies associated with banks and enhance economic growth in the long run. Levine (2002) argued that neither bank-based nor the market-based financial system is mutually exclusive in promoting economic growth. However, bank-based financial system is more growth inducing in countries with poor legal system whereas, market-based system has advantage as the legal system improves (Rajan & Zingales, 1998). Consequently, the theoretical underpinning for this research work is the endogenous growth model viewed from the bank-based financial development perspective due to the nature of the Nigerian legal system.

Review of Empirical Literature

The nexus between the depth of a financial system and manufacturing output has been put to empirical investigation by varieous schorlars. To start with, Mesagan et al. (2018) examined the impact of financial development on the performance of the Nigerian manufacturing sector from 1981 to 2015, using autoregressive (AR) model. They noted that financial development measured by M2 to GDP ratio and private sector credit as ratios of GDP both had positive and significant impact on manufacturing sector in Nigeria. In a similar study using vector error correction model from 1973 to 2009, it was discovered that financial sector measured by bank lending also had positive and significant impact on manufacturing output in Nigeria (Obamuyi et. al., 2012).

Omolara and John (2016) compared the effect of financial sector on manufacturing output during pre-reform era from 1976 to 1985 with a post-reform era from 1986 to 2012 in Nigeria, using Vector Autoregressive Model. They found that financial deepening had significant and a more positive effect on the performance of the manufacturing sector in pre-reform era than the post reform era. Their analyses, however, looked spurious because the variables had different order of integration, yet the authors used VAR model. Similarly, Ebi and Nathan (2014) examined the relationship between bank credit on manufacturing sector in Nigeria from 1972 to 2012, using Vector error correction model. They opined that bank credit has positive and significant impact on manufacturing output (Ebi & Nathan, 2014).

In a sharp contrast from the foregoing, Olanrewaju, Aremo and Aiyegbusi (2015) studied the impact of banking sector reform on output of the Nigerian manufacturing sector from 1970 to 2011, using Engle-Granger cointegration technique. Their analysis revealed a significant negative relationship between financial deepening and performance of the manufacturing sector. In a related study, Aiyedogbon and Anyanwu (2015) studied the determinant of industrial productivity in Nigeria from 1981 to 2013, using Ordinary least Square technique and found that private sector credit has negative and significant impact on industrial development.

Despite the fact that some of the variables were stationary at levels, while others were stationary at first and second difference, the author used OLS instead of a more robust techinque like the bounds testing approach. Udoh and Ogbuagu (2012) also examined the impact of financial development on industrial production in Nigeria, using autoregressive distributed lag model spanning 1970 to 2009. They found that financial development had negative impact on industrial output.

However, Asaleye et al. (2018) examined the relationship between financial sector and manufacturing performance in Nigeria from 1981 to 2016, using vector error correction model. They found that financial deepening measured by the ratio of broad money to GDP and private sector credit to GDP ratio both had no significant impact on manufacturing performance in Nigeria.

3.0 Data and Methodology

To examine the long- run effect of financial deepening on manufacturing output, secondary data covering the period of 1981 to 2019 were sourced from the Central Bank of Nigeria. The dependent variable, which is the manufacturing output, consist of total output of the manufacturing sector measured as a percentage of GDP. The independent variables consist of financial deepening measured from both the financial institutions and financial markets perspectives. From the institutional angle, financial deepening is measured by the private sector credit as a ratio of GDP, while stock market capitalisation as a ratio of GDP was used as a measure of financial deepening from the financial markets perspective. Capacity utilisation measured by manufacturing capacity utilisation and interest rate measured by prime lending rates were also captured in the model as control variables.

This study employed autoregressive distributed lag (ARDL)/Bounds testing approach to cointegration. The ARDL model is a robust technique developed by Pesaran, Shin and Smith (2001) for testing the existence of a long- run relationship among a set of time series data. Unlike the Johansen or Engel-Granger cointegration methods, the Bounds testing approach provides valid estimation among variables whether the underlying regressors are integrated of the same order or not. The ARDL model is not only suitable for estimating small or finite sample size but also capable of estimating both short-run and long-run parameters simultaneously (Pesaran et al., 2001).

From the unit root tests, which indicated that all the variables were not integrated of the same order, therefore, the nexus between financial deepening and manufacturing output in Nigeria from the institutional perspective and the market perspectives were specified in equation 3.1 and 3.2, respectively, following Udoh and Ogbuagu (2012) and Asaleye et. al. (2018) with few modifications :

$$\Delta MFQ_t = \beta_0 + \sum_{i=1}^{m} \beta_1 \Delta MFQ_{t-i} + \sum_{i=1}^{m} \beta_2 \Delta BFD_{t-i} + \sum_{i=1}^{m} \beta_3 \Delta MCU_{t-i} + \sum_{i=1}^{m} \beta_4 \Delta INT_{t-i} + \alpha_1 MFQ_{t-1} + \alpha_2 BFD_{t-1} + \alpha_3 MCU_{t-1} + \alpha_4 INT_{t-1} + \mu \ldots\ldots\ldots (3.1)$$

$$\Delta MFQ_t = \beta_0 + \sum_{i=1}^{m} \beta_1 \Delta MFQ_{t-i} + \sum_{i=1}^{m} \beta_2 \Delta MFD_{t-i} + \sum_{i=1}^{m} \beta_3 \Delta MCU_{t-i} + \sum_{i=1}^{m} \beta_4 \Delta INT_{t-i} + \alpha_1 MFQ_{t-1} + \alpha_2 MFD_{t-1} + \alpha_3 MCU_{t-1} + \alpha_4 INT_{t-1} + \mu \ldots\ldots\ldots (3.2)$$

Where:

Dependent Variable			***Parameters to be estimated***		
MFQ	=	*Manufacturing Output*	$\beta_0 - \beta_3$ $\alpha_1 - \alpha_4$	= =	*Coefficients for long- run relationship* *Coefficients of the error correction term*
Independent Variables			***Other Algebraic Notations***		
BFD	=	*Bank- Based Financial Deepening*	m	=	*Optimum lag length*
MFD	=	*Market-Based Financial Deepening*	Δ	=	*Difference operator*
MCU	=	*Manufacturing Capacity Utilisation*	μ	=	*Stochastic disturbance*
INT	=	*Interest Rate*	t	=	*Time trend over the period of the analysis*

4.0 Results and Discussion of Findings

The empirical analysis begins with univariate analyses, using optimum lag selection. This is to ensure that lags are not arbitrarily ignored or included in the models and the results are presented in Table 4.1 and 4.2 respectively.

Table 4.1 Lag Selection for Bank-Based Financing Deepening and Manufacturing Output

No. of Lag	LL	LR	FPE	AIC	SBIC	HQIC
0	-107.8531	NA	0.005873	6.214060	6.390007	6.275470
1	3.551815	191.8640*	2.95e-05*	0.913788*	1.793521*	1.220838*
2	18.48721	22.40310	3.25e-05	0.972933	2.556452	1.525623
3	34.46185	20.41204	3.57e-05	0.974341	3.261647	1.772672

Source: Author's Computation using EViews 9

Starting with Bank-based financial deepening and manufacturing output nexus, all the lag selection analyses indicated one maximum lag. However, the Akaike Information criteria was selected for this analysis being the only criteria with a minimum residual value (0.914).

Table 4.2 Lag Selection for Market-Based Financing Deepening and Manufacturing Output

No. of Lag	LL	LR	FPE	AIC	SBIC	HQIC
0	-139.1461	NA	0.033410	7.952562	8.128509	8.013972
1	-14.58794	214.5169*	8.09e-05*	1.921552*	2.801285*	2.228603*
2	-4.603642	14.97645	0.000117	2.255758	3.839277	2.808448
3	10.94288	19.86500	0.000132	2.280951	4.568256	3.079282

Source: Author's Computation using EViews 9

As in the case of the bank-based model, all the criteria also indicated one optimum lag length for the market-based model. The bounds cointegration analysis is therefore analysed using Akaike Information criteria following its residual value (1.923), which was the least of all the selection criteria (See Table 4.2).

After the selection of the optimum lag length, Augmented Dickey Fuller (ADF) unit root test developed by Dickey and Fuller (1979) and Philip-Perron (PP) test put forward by Philip and Perron (1988) were employed by taking cognizance of the study period of this research work, which is 39 years. This is because ADF and PP test are more suitable when period coverage is more than 25 but less than 50 (Arltova & Fedorova, 2016).

Table 4.3: Unit Root Tests of Dependent and Independent Variables

	ADF		Philip-Perron	
Variables	**t-ratio for I(0)**	**t-ratio for I(1)**	**t-ratio for I(0)**	**t-ratio for I(1)**
MFQ	0.377	**-5.324*** **	0.421	-5.357***
BFD	-1.100	-5.609***	-1.043	-6.065***
MFD	-0.949	-5.335***	-0.802	-6.242***
MCU	-2.570	-4.148***	-2.505	-3.971***
INT	-2.821*		-3.502**	

Note: Significant at 1% (***), 5% (**) and 10% (*), respectively.

Source: Author's Computation using EViews 9

The ADF unit root result indicateed that interest rate is stationary at 10 percent level while PP test showed that it is stationary at 5 per cent. Therefore, the null hypothesis, which says that interest rate is not stationary at level, is rejected for both the ADF and PP

tests. However, the null hypotheses of all the other variables (manufacturing output, bank-based financial deepening, market-based financial deepening and capacity utilisation) could not be rejected at levesl following their respective t-ratio as indicated in Table 4.3. However, at their respective first difference, both the ADF and PP unit root tests indicated that the variables were stationary at one per cent level of significance. This implies that while interest rate is I(0), all the other variables are I(1). The mixture of order of integration of these series informed the adoption of ARDL/Bounds testing approach.

Table 4.4: Bounds Test Results for Financial Development and Manufacturing Output

Model	Dependent variable	Function	F-Statistics
Model I	MFQ	$F_{MFQ}(MFQ\|BDF, MCU, INT)$	4.093**
Model II	MFQ	$F_{MFQ}(MFQ\|MDF, MCU, INT)$	3.730*
Asymptotic Critical Value for Rejecting Null Hypothesis			
Critical value F		**At 5%**	**At 10%**
Lower bound		2.709	2.164
Upper bound		4.022	3.318
Significant at 5% (**) and 10% (*).			

Source: Author's Computation using EViews 9

The bounds testing analysis indicateed the presence of one cointegration equation for the bank-based financial development model. This is because the F-statistic (4.093) is greater than the upper bound critical value of 4.022 at 5 per cent level of significance. Therefore, the null hypothesis of no cointegration between depth of Nigerian financial system and manufacturing output in Nigeria was rejected. Similarly, for the market- based financial development model, the F-statistic (3.730) was also greater than the F critical value of 3.318 at 10 per cent level of significance (see Table 4.4).

The conclusion deduced from the bound testing outcome was that there was a cointegration between financial deepening and manufacturing output in Nigeria from both the institutions and markets perspectives. However, the cointegration relationship among the variables was stronger from the institutional angle than that of the financial markets. This imply that the institution-based financial deepening has a greater long-run impact on the manufacturing output than a market-based financial deepening in Nigeria.

After establishing the presence of cointegration, we used the ARDL technique to examine the long- run relationship between financial deepening and manufacturing. The results are presented in Table 4.5.

Table 4.5 Result of Estimated Long-run Coefficients

	Bank-Based Model			Market- Based Model		
Independent variables	**coefficient**	**Standard Error**	**t-ratio**	**coefficient**	**Standard Error**	**t-ratio**
Financial Deepening	1.369***	0.356	3.846 (0.001)	0.905**	0.390	2.320 (0.026)
Capacity Utilization	1.157***	0.270	4.291 (0.000)	1.564***	0.316	4.955 (0.000)
Interest Rate	0.025	0.030	0.838 (0.408)	0.020	0.050	0.414 (0.681)

Significant at 1% (***) and 5% (**). Figures in parenthesis are probability values.

Source: Author's Computation using EViews 9

Starting with the bank-based perspective, the ARDL analysis revealed that financial deepening has positive and significant impact on manufacturing output in Nigeria. This is due to the value of the estimated parameter 1.369 and the probability value of 0.001, indicating positive and significant impact at 1 per cent. Similarly, the estimated parameter for the market-based financial deepening (0.095) is also statistically significant at 5 per cent level.

This implies that the depth of the financial institutions and markets in Nigeria has positive and significant long- run impact on the performance of the manufacturing sector. This contradicts the findings of Aiyedogbon and Anyanwu (2015) and Olanrewaju et. al., (2015) but further substantiateed that of Ebi and Nathan (2014) as well as Omolara and John (2016). However, the fact that the institution- based financing with 1.369 estimated parameter has greater impact on manufacturing output than the market- based financing (with 0.390) in Nigeria further autheticate the theoretical argument put forward by Rajan and Zingales (1998) that a bank-based financial system is more growth inducing in countries with poor legal system than a market-based financial system. Nevertheless, the strong and positive impact of both the bank-based and the market-based financing on manufacturing output showed that the development of the Nigerian financial system as an indispensable prerequsite for real sector growth and economic diversification is not negotiable.

On the control variables, the empirical analysis showed that manufacturing capacity utilisation also has positive and significant impact on manufacturing output in Nigeria following the p-value of 0.000, indicating significant long- run relationship at 1 per cent (see Table 4.5). However, interest rate has no significant impact on the performance of manufacturing sector in Nigeria.

Table 4.6 Result of Estimated Short-Run Coefficients

	Bank-Based Model			Market- Based Model		
Independent variables	**Coefficient**	**Standard Error**	**T-Ratio**	**Coefficient**	**Standard Error**	**T-Ratio**
Financial Deepening	0.182**	0.073	2.506 (0.017)	0.726**	0.029	2.502 (0.017)
Capacity Utilization	0.154**	0.072	2.147 (0.039)	0.125*	0.068	1.850 (0.073)
Interest Rate	0.003	0.004	0.773 (0.445)	0.002	0.004	0.401 (0.691)
Ecm(-1)	-0.133	0.052	-2.580 (0.014)	-0.080**	0.037	-2.141 (0.040)

Significant at 1% (***), 5% (**) and 10% (*). Figures in parenthesis are probability values.

Source: Author's Computation using EViews 9

The empirical outcome of the short- run analysis as indicated in Table 4.6 further substantiateed the long- run results. Both the institutions and the market measures of financial developments, as well as

manufacturing capacity utilis,ation have positive and significant impact on manufacturing output. The error correction term, which is -0.133, is not only less than 1, but also carries the expected negative sign. This indicated 13.3 per cent speed of adjustment and it is statistically significant at 5 per cent.

Table 4.7 Test for the Adequacy of the ARDL Model

Test for Serial Correlation Test			
		Model I	**Model II**
L M Version	CHSQ	0.003 [0.955]	0.789 [0.978]
F Version	F	0.003 [0.959]	0.680 [0.979]
Autoregressive Conditional Heteroscedasticity Test of Residuals			
		Model I	**Model II**
L M Version	CHSQ	0.941 [0.332]	0.298 [0.585]
F Version	F	0.838 [0.367]	0.261 [0.613]

The values in parenthesis are probability values

Source: Author's Computation using EViews 9

To confirm the adequacy of the ARDL technique, we subjected the two models to post-estimation diagnoses, using Breusch-Godfrey test for serial correlation as well as autoregressive conditional heteroscedasticity test or residuals (Breusch, 1978; Godfrey, 1978). The outcome as presented in Table 4.7 revealed that the null hypothesis, which says there is no serial correlation could not be rejected for the two models. This is due to the respective p-values of the Langragian Multiplier (LM) and F-statistic tests which are 0.955 and 0.959 for bank-based model, and 0.978 and 0.979 for market-based model. Similarly, for the heteroscedasticity test, we could not reject the null hypothesis that the respective models were homoscedastic following the p-values of Langragian Multiplier (LM) of the bank-based model, which is 0.332 and 0.585 for the market-based model. These outcomes showed that the financial development and manufacturing output models are adequate.

5. Conclusion and Recommendations

This research empirically examineed the impact of financial deepening on the Nigerian manufacturing output from 1981 to 2019, using autoregressive distributed lag model. Unlike the previous studies that measured the depth of financial system only from the institutional perspective, this study captured both the institutional and the market-based measures of financial development in a two differently specified models with the view to understand the relationship, compare and identify the most effective aspect of the financial system development that induces manufacturing output. The ARDL analysis showed that the development of the financial institutions as well as financial market development both have positive and significant impact on the performance of the Nigerian manufacturing sector. However, the financial institutions have greater impact on the manufacturing output in Nigeria than the financial markets.

In addition, it was discovered the manufacturing capacity utilisation is a major factor determining the real sector performance in Nigeria. This is because a percentage rise in capacity utilisation will boosts the contribution of manufacturing output to GDP by approximately 1.16 per cent, while interest rate, particularly the prime lending rate has no significant impact on manufacturing output.

The conclusion gathered from this research work is that the development of financial sector from both the market and institutional perspectives and the manufacturing capacity utilisation are not only the key determinants of manufacturing output but also indispensable prerequsites for real sector growth and economic diversification in Nigeria. Therefore, to increase the contribution of the manufacturing sector to GDP, the following recommendations must be taken seriously.

Firstly, the Nigerian government, through the Central Bank of Nigeria should deploy its' direct and indirect monetary policy instruments to further boost the mobilisation of cost-effective credit from the financial system to private sector, especially manufacturing sub-sector. This will further increase the depth of the institutional and the market-based financing. However, a more priority should be given to the institution-based financing being a more effective catalyst for the manufacturing sector performance.

Secondly, the Nigerian financial market (especially the stock market) must be strengthened with policies that will boost investors' confidence and ensure sustained rise in market capitalisation. This will increase the depth of the financial markets hence, the performance of the manufacturing sector.

Lastly, the government, in collaboration with Manufacturers Association of Nigeria (MAN) 1 other relevant stakeholders, must provide conducive environment for the proper utilisation of the excess capacity in the manufacturing sector. This will not only increase the manufacturing output but also increase the real sector contributions to gross domestic product.

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Democracy and Quality of Life in Nigeria

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ABSTRACT

The study investigated the effect of democracy on the quality of life in Nigeria from 1979-to 1983 and 1999-to 2020 using the Auto-Regressive Distributed Lag model technique. Democracy represented by the rule of law, good governance, corruption, education, institutional quality, and security was found to impact the quality of life posed by poverty headcount ratio in the short-run and the long-run. The corrupt practices worsen the poverty level while good governance, education, security, and rule of law lessen poverty. Institutional quality worsens the poverty level as a result of the quality of the institution in Nigeria. The granger-causality result shows bi-directional causation between corruption and poverty. Therefore, the government should ensure the supremacy of the rule of law, eschew corrupt practices, and guarantee the security of life and property to have a good institution for democracy to reduce the poverty level in Nigeria.

Keywords: *Democracy, poverty level, security, rule of law, institutional quality*

JEL: *I38 K19 I25*

INTRODUCTION

Democracy is a form of government introduced in the 17th century and has undergone several changes over time (Igbodalo, 2012). Nigeria gained independence in October 1960 and the country has been evolving and implementing different development policies for the development of the country. The introduction of democracy in Nigeria has experienced a lot of changes beginning from when Nigeria started as a regional territory to when states were created till this time (Mustafa, 2006).

These have made the country become a dependent nation that tries to grow its economy from the revenue generated from local and foreign trade (Baets, 2011). Nigeria is in the fourth republic in its democratic process with the present president being President Muhammad Buhari (Gilbert & Ubani, 2015). Democracy gives the citizen of the country the opportunity to vote for whom they desire as their leader but the kind of leader elected determines the progress of the county, all things being equal. Hence, the standard of living of the citizens emanating from the elected government policy determines the quality of life of the citizens (Okeke, 2014).

Quality of life reflects the well-being of citizens of a country or the standard of life of the citizens depending on factors like housing, improved facilities, increased income, and availability of basic amenities among others. The quality of life of the population of a country is a key element for stimulating the productivity and growth of the economy. In a conventional production relation, the level of the input has a resultant effect on the output level given the scale of production and returns to scale (Phillips, 2006).

Nigeria has operated both a military system of government and a democratic system of government since independence. The military system of government was always rejected because it does not represent the wishes of the people. However, Nigerians have been experiencing a high rate of poverty since the beginning of the fourth republic in Nigeria. Different reforms like privatization and concession of important services and infrastructure to the private sector have been implemented without anticipated results. This has driven poor quality of life of the citizen and increased unemployment, displacement of citizens, human trafficking, kidnapping, insecurity, and other social vices (Okeke, 2014).

At the inception of the present democratic dispensation in 1999, there were hopes of increasing living standards and economic progress. Despite numerous implemented socio-economic policies by

the successive civilian administration, Nigeria remains poor in socio-economic, and political developments. From the 2022 Nigeria poverty assessment, Nigeria's poverty headcount rate at the international poverty line was 42.8 per cent in 2010 and the absolute number of poor people has increased with rapid population growth (World Bank, 2022). Consequently, political instability, abject poverty, unemployment, increased crime rate, poor health prospects, and widespread undernourishment are the key characteristics of Nigeria's political economy. This has been mainly attributed to the absence of true democracy in the country. Thus, this study examines the effect of the democratic rule on the quality of life of Nigerian citizens. The study covers the second republic from 1979 to 1982 and the current fourth republic from 1999 to 2020. The remaining parts of the study are divided into four sections. Section two covers a literature review while section three contains methodology. Section four covers data analysis and discussion of results while section five concludes.

2. Literature Review

2.1 Conceptual Review

Democracy is a system of government in which citizens use the electoral power to choose those who governed them (Obilor et.al., 2018). Abraham Lincoln, in his 19th November 1863 address, describes democracy as the "government of the people, by the people and for the people". This underscores the need that democracy is both representative and participatory hence its emphasis on the people's welfare. Soludo, (2007) observed that democracy is sovereignty that can dwell in a person, a chosen few, or the entire adult population. Sovereignty in the adult population is constituted and nurtured when a democratic government gives and maintains definite laws (Adebayo & Oniyinde, 2021).

Some of these principles are universal political participation, political equality, majority rule, rule of law, government responsiveness to public opinion, and basic freedoms of speech, press, assembly, religion, and organization (Mukand & Rodrik, 2020). Democracy provides governance rights and power to direct state affairs to the elected representatives. Governance on the other hand refers to the way power is exercised in the management of a country's socio-economic resources for development. Governance creates a connection between rulers and the ruled, the state and society, the governors, and the governed.

From the economics lens, governance is the existence of multiple agencies that cut across conventional public and private sector boundaries and are mutually central to the development and delivery of public policy (Ogbo et.al, 2020). Hence, in the context of democracy, governance is the cost-effective and accountable use of political, economic, and administrative authority by the government to achieve societal objectives, including the welfare of the people, sustainable development, and personal freedom (Oni et.al, 2020). Rule of law in a democracy is a mechanism that ensures that the government and its citizens are equal before the law thereby averting any form of arbitrary use of power by the government or its personnel (Waldron, 2008). It is a rule of government in which all individuals and institutions are accountable to the promulgated laws and which are conformable to international standards (Thompson, 2013).

United Nations Development Programme (2007) defined human security as safety from acute danger such as hunger, disease, and subjugation and protection from a sudden and harmful interruption in the everyday form of life. It identified key elements of human security as economic security, food security, health security, environmental security, personal security, community security, and political security. Achumba and Ighomereho (2013) argued that people struck by insecurity are oblivious of happenings around them and incapable of protecting themselves against uncertainty. More so, conflicts and insecurity are profound in countries with low education, high population growth, high dependence on primary product export, and economic decline (Collier, 2006).

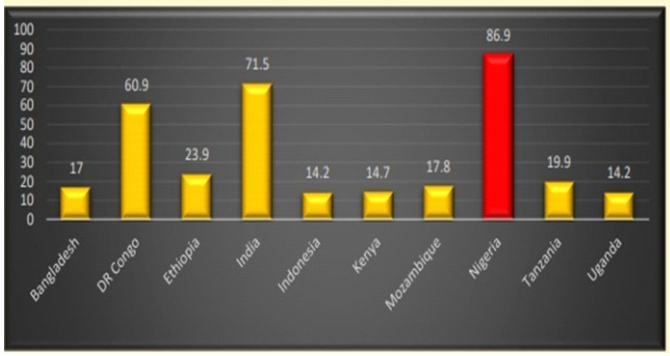
Nigeria is presently facing civil unrest and insecurities including armed robbery, kidnapping, and ritual killings, murder and political assassinations, herdsmen disturbances and clashes with farmers, violent agitations for resource control in Niger Delta, agitations for self-determination, ethnic and religious tensions, and political/post-election violence (Ewetan & Ese, 2014). Good governance, rule of law, and security in a democratic government show that society is led by a government that provides for the demand of its citizens thereby creating a good quality of living in the society (Ogundiya, 2010; Gilbert & Allen, 2014). Oni and Excellence-Oluye, (2019) argued that, though Nigeria is described as operating a democratic system of government there are fewer indices to show the existence of good governance in the country.

Poverty and inequality remain high and increasing despite increased revenue under civilian rule. For example, the 2013 MO Ibrahim report showed that Nigeria is one of the countries with a poor development scale in Africa. Nigeria also ranked 13th out of 16 West African countries and 41st out of 54 continental countries on good governance with a score of 41 out of 100 (Anagun, 2020).

Poverty is a condition in which an individual lacks the needed resources that are relevant for a minimum standard of living at a particular period. The lack of expected resources ranges from the supply of the basic amenities of life like food, clothing, and shelter to other needs. Poverty can also involve an insufficient supply of human resources to an individual that might lead to poor housing, access to clean water, healthy food, medical attention, and other things that increase life expectancy (Jamo, 2010). Singh (2021) and Dauda (2017) submitted that poverty is the incapability to achieve the minimum standards of living and inadequate resources for sustenance. Poverty is a major issue that affects the level of living in Nigeria and is caused by corruption, and an unstable political environment (Iheonu & Urama, 2019). World Poverty Clock (2019) shows that the poverty rate has increased gravely in Nigeria with the highest rate of extreme poverty in the world. The report showed that the poverty rate had grown worse as of 2018 in Nigeria.

Nigeria was said to have 86.9 million people living in extreme poverty in 2019 which was followed by India with 72 million people and Congo DR with 61 million of her citizens living in poor quality of life. Figure 1 shows the poverty rate in the world led by Nigeria. The world poverty clock reveals that Nigeria's poverty rate rose to 105 million in 2020 making 51% of her population in extreme poverty higher than her previous poverty rate of 86.9 million people in 2019.

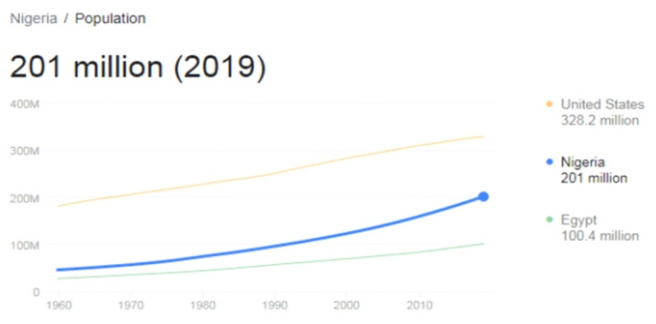
Figure 1: Nigeria Poverty Rate



Source: World Data Lab (2019)

Figure 2 further shows that poverty in Nigeria is high and tremendously increasing.

Figure 2: Poverty in Nigeria



Source: Alimi et.al (2021)

Since the returned to democratic rule in May 1999, after about thirty years of military rule and economic crises, Nigeria still faces challenges of national reconciliation, national integration, economic reform, democratic consolidation, electoral malpractices, insecurity, and corruption (Arowolo & Aluko, 2012; Igbodalo, 2012; Gberevbie, 2014). For example, Nigeria is classified as the 10th most unsafe in Africa from 2001-2003. The country was ranked 10th and 9th in 2005 and 2006 and 9th most insecure country in Africa in 2007. From 2008 to 2019 the country was ranked 17th.

This indicates that insecurity in the country is worsening even with the increasing security expenditure. The value of the Nigerian currency (Naira) has also continues to depreciate since the return of democracy. For instance, Naira to US$ ratio was 1US$ to N22.00 in 1994. This depreciated from N76.00 to 1US$ and N96.10 to 1US$ in 1998 and 1999 (Agwor, 2015). The value of Naira to US dollar was N101.70 and N111.70 in 2000 and 2001 and dropped to N118 and N129 in 2002 and 2003 and finally to N158 in 2013, N200 in 2015, and currently exchanged for about N700 to a 1US$. This shows that the value of the Naira has consistently suffered depreciation (Onwuka, 2021). The unemployment rate, poverty, and inequality continue to increase since the fourth republic began. Unemployment increased to 24.2% in the first quarter of 2015 from 23.9% in the fourth quarter of 2011. It averaged 15.9% from 2006 until 2015, reaching an all-time high of 24.2% in the first quarter of 2015 (NBS, 2015). As the fourth world's largest democracy and the sixth world's largest oil supplier with a population of over 130 million and high economic prospects, many Nigerians are still poor (Jamo, 2013; Ibrahim, 2013).

2.2 Empirical Review

Acemoglu et.al, (2014) examined the impact of the global spread of democratic rule in the past 50 years in 175 countries using economic growth, capital, investment, trade (exports plus imports), secondary and primary schools enrollments, infant mortality, and financial flows (net foreign assets over GDP). From the study, democratisation was found to positively stimulate GDP per capita by about 20% in the long run. This was further established when a semi-parametric propensity score matching estimator was used to control for the dynamics of GDP. The study also obtained similar results using regional waves of democratization and employing instruments for country democracy. It was found that democracy improves future GDP by stimulating investment, promoting schooling, encouraging economic reforms, increasing the provision of public goods, and lessening social unrest. The study found no evidence of an adverse effect of democracy on

economic growth for developing countries. Heshmati and Kim (2017) study the relationship between economic growth and democracy by estimating a nation's production function specified as static and dynamic models using panel data to reflect a robust stimulating effect of democracy on economic growth.

Gerring et.al, (2007) examined the effect of democracy on human development among European nations with different causal routes by which democracy might improve social welfare. The authors tested the hypotheses that a country's human development is a function of its democratic level in a specific year and its stock of democracy in the past century. Infant mortality rates (IMR) were used as a key measure of human development in different time-series statistical tests for the two hypotheses between 1960 and 2006.

The study used composite indices such as the human development index (HDI) which combines indicators of mortality, education, and income per capita, or the Physical Quality of Life Index (PQLI), which combines indicators of mortality and education. The results show smaller departure (average IMR rates of 91 for the bottom quintile and 51 for the top quintile among 45 developing countries). On the equilibrium, estimations of IMR by quintile show that poorer groups have higher mortality rates than a richer groups. The study shows the existence of a causal relationship when democracy assumed a long-run, historical process with economic development.

Jamo (2013) examined the effect of a democratic period on the Nigerian economy between 1999 and 2013 specific to the fourth republic. The study used poverty reduction, employment generation, healthcare delivery, revenue and expenditure, gross domestic product (GDP), foreign exchange rate, good governance, and human rights development Index (HDI) as variables. The results show a one-way causality from GDP to good governance and bi-directional causation between good governance and foreign exchange. Thus, respect and adherence to the ideal of democratic principles and good governance were recommended. Oladipo (2016) identified colonialism and the nature of politics as two factors accountable for the inability of democracy to foster the promotion of the common good in Nigeria. It was argued that colonialism shaped Nigeria into a country where politics lacked morality. The author concluded that the nature of Nigerian politics does not provide a good environment for democracy to thrive. Thus, a re-examination of the principles of governance and the relationship of the citizens with the state is required for a better foothold for democracy in Nigeria.

Umaru et.al, (2014) on the examination of the impact of democracy on the performance of the Nigerian economy between 1983 and 2012 divided the period into the military (1983-1998) and civilian (1999-2012) with a comparative analysis of major indicators of economic performance in Nigeria. Simple averages, multiple regression analysis, granger-causality test, and Johansen co-integration techniques were employed to examine the long-run relationship between democracy and economic growth. The authors used unemployment, poverty, and corruption as an index of economic performance. The Johansen co-integration result shows the non-existence of a long-run relationship between economic growth and democracy in Nigeria. The results further showed a lack of causal relationship between GDP and poverty as well as between GDP and democracy. There is also evidence of the existence of bi-directional causality between corruption and poverty. The results show that changes in the unemployment rate, inflation rate, poverty level, and corruption level increase output while democratic changes reduce output in the economy. The study concluded that a military regime is more appropriate for the reduction of unemployment, poverty, corruption, and income inequality in Nigeria.

3.0 Research Methodology

The theoretical framework for this work is the endogenous growth model of Street (1987). The theory assumes that the quality of life of citizens is dependent on the political strategy and economic realities in the system. The well-being of the citizens in the country, according to the theory is determined by the contributions of the government to the public and private goods which are aided by the policy direction of the government. The theory assumed further that individual has different behaviour; social change in society is dependent on human as social being, and human changes over time as a result of institutional quality in society (Lewis, 2013). Nelson (2002) argued that Street (1987) theory concentrated more on the institution and variables that encourages growth in emerging societies. The model integrated a new idea of human capital, skills, and knowledge that increase workers' productivity and unlike physical capital, human capital has increasing rates of return. Based on Jamo (2013), the functional relation between democracy and quality of life in Nigeria can be stated as:

$$PVRT = F(RUL, GOG, SCT, EDU, COR \text{ and } INSQ) \quad (1)$$

Equation (1) states that the poverty headcount ratio in a country depends on rule of law, good governance, security, educational level, corruption, and institutional quality. The poverty head count ratio is represented by PVRT, RUL represents Rule of

law, Good governance is denoted by GOG, SCT for security, EDU stands for education, corruption is denoted by COR, and institution quality is represented by INSQ. Therefore, equation (1) can be explicitly stated as:

$$PVRT = \beta_0 + \beta_1 RUL + \beta_2 GOG + \beta_3 SCT + \beta_4 EDU + \beta_5 COR + \beta_6 INSQ + \varepsilon_t \quad (2)$$

A priori, all things being equal, it is expected that β1, β2, β3, β4, and β6 are negative in a democratic government while β5 is expected to be positive. That is inverse relationships are expected between poverty head count rate and supremacy of the rule of law, good governance, adequate security, good education, and good institutional quality in a democracy while a direct relationship is expected between corruption and poverty. This means that the poverty headcount ratio is expected to decrease with the supremacy of the rule of law, good governance, adequate security, good education, and good institutional quality in a democracy while the poverty level will increase with increased corruption.

3.1 Estimation and Identification

The estimation techniques used in the study are the ADF (Augmented Dickey-Fuller) test for the unit root test, the ARDL (Auto-Regressive Distributed lag) model, and the Granger-causality test to examine the effect of democracy on the quality of life in Nigeria. Unit root test is used to check the stationarity and the order of integration of the data. ARDL is more appropriate when variables are integrated of a different order, I(0), I(1), or a combination of both. To determine the number of co-integrating vectors, Johanssen's co-integration method was employed using the trace test statistics and the maximum Eigen-value test statistics. The trace statistics are used to test the null hypothesis so that the number of divergent co-integrating relationships is equal to or less than "r" against the alternative hypothesis of more than "r" co-integrating relationship.

3.2 Data Sources and Measurement

Annual time-series data from 1979 - 1983 (the period of the Nigeria second republic) and 1999 to 2020 (the current Nigeria fourth republic) were used for the study. The third republic (1992 - 1993) was not included because it was an unsuccessful attempt by General Ibrahim Babangida to restore Nigeria's democracy. The data were obtained from the World Bank Development Indicator (WDI). The dependent variable is the quality of life, proxies with poverty headcount ratio (PVR). The poverty headcount ratio shows the trend of Nigerians' living standards in the periods considered. The independent variables are rule of law (RUL), good governance (GOG), security (SCT), education (EDU), corruption (COR), and institutional quality (INSQ). Table 1 shows the variables and their measurement.

Table 1: Data Sources and Description

S/N	Label	Descriptions	A priori Expectation	Source
1.	PVRT	Poverty head count ratio is a proxy for quality of life		WDI
2.	RUL	Rule of law, proxy for the quality of democracy in the country.	Negative, i.e. supremacy of the rule of law reduces poverty and increase quality of life.	WDI
3.	GOG	Good governance within the country.	Negative, i.e. good governance reduces poverty and hence increase quality of life.	WDI
4.	SCT	Adequate security within the country.	Negative, i.e. adequate security reduces poverty and hence increases quality of life	WDI
5.	EDU	The level of education in the country.	Negative, i.e. good education reduces poverty and hence increases quality of life.	WDI
6.	COR	The level of corruption in the country.	Positive, i.e. corruption increases poverty and reduces quality of life	WDI
6.	INSQ	The situation of institutional quality in the country.	Negative, i.e. institutional quality reduces poverty and hence increases quality of life.	WDI

3.3 Descriptive Statistics of the Variables Used:

Table 2 shows that the mean of PVRT, GOG, RUL, SCT, EDU, COR, and INSQ are 19.8, 14.5, 12.5, 6.6, 0.7, 10.9, and 27.8 respectively. The maximum and minimum values are 27.0, 21.1, 18.8, 26.6, 0.9, 19.4, 35.5 and 7.9, 8.6, 5.4, 2.4, 0.5, 0.5, 7.0 for PVR, GOG, RUL, SCT, EDU, COR and INSQ respectively. From table 2, all the variables are negatively skewed SCT which is positively skewed with the value of 2.7. The Jarque-berra is observed by checking its probability and used to test for normality. The Jarque-berra result is accepted if its p-value is greater than 0.05. Thus, we conclude that Jarque-berra is significant except for SCT where its p-value is less than 0.05.

Table 2: Descriptive Statistics of the Variable Used

	PVRT	COR	EDU	GOG	INSQ	RUL	SCT
Mean	19.8490	10.9627	0.7707	14.569	27.8294	12.5070	6.6019
Maximum	27.0142	19.4175	0.9568	21.0784	35.4679	18.7500	26.5955
Minimum	7.8817	0.5050	0.4847	8.6124	7.0000	5.4455	2.4155
Std. Dev.	5.3941	4.2256	0.1711	2.9130	6.7109	3.9628	5.4085
Skewness	-0.5775	-0.4870	-0.9314	-0.0894	-1.5258	-0.1274	2.7728
Kurtosis	2.6911	3.4595	2.3109	2.9087	5.7417	2.1373	10.3358
Jarque-Bera	1.2506	1.0149	3.4515	0.0353	14.7259	0.7081	73.9976
Probability	0.5351	0.6020	0.1780	0.9825	0.0006	0.7018	0.0000
Observation	26	26	26	26	26	26	26

2. Results and Discussion

2.1 Unit Root Stationarity Test

The stationarity test was conducted using Augmented Dickey-Fuller (ADF) Technique. The unit root test is presented in Table 3. From table 3 PVR, RUL, COR, INS, and SCT are stationary at first difference i.e. there I(1) data while GOG and EDU are stationary at level i.e. there I(0). These results implied that Autoregressive Distributed Lag Model (ARDL) is the appropriate estimation technique. Therefore, the examination of the effect of democracy on the quality of life in Nigeria was done with the Autoregressive Distributed Lag Model (ARDL) estimation method.

Table 3: Summary of Augmented Dickey-Fuller Unit Root Test

Variables	Level ADF Tests Statistics	Critical value at level of 5%	First Difference ADF Test Statistics	Critical Value of Fist Difference at 5%	Remark
PVR	-2.576663	-2.998064	-5.723198	-3.004861	I(1)
GOG	--4.036930	--2.998064	--.036930	--2.998064	I(0)
RUL	--3.806290	-3.92	-3.806290	-3.040391	I(1)
EDU	-3.563315	2.998064	-3.563315	2.998064	I(0)
COR	-2.091282	-2.998064	-5.529693	-3.004861	I(1)
INS	-2.760179	-2.998064	5.380357	-3.004861	I(1)
SCT	-2.954517	-2.998064	-8.460581	-3.004861	I(1)

Significant at 5%; MacKinnon critical.

Source: Author computation, 2021

4.2 Examination of the Effect of Democracy on the Quality of Life in Nigeria

Table 4 shows the results of the short-run and long-run effects of democracy and quality of life in Nigeria using the Autoregressive Distributed Lag Model (ARDL) estimation method. The Akaike information criterion (AIC) was used to determine the optimal number of lags and 1 lag was chosen as the optimum lag length.

Table 4: Short-run and Long-run ARDL Estimate of the Effects of Democracy on Quality of Life in Nigeria

Short-Run		**Long-Run**	
Variables	**Dependent Variable: D(PVR)**	**Variables**	**Dependent Variable: PVR**
	Coefficients		**Coefficients**
D(PVR(-1))	0.0339 (0.3465)	PVR(-1)	0.3897 (0.2252)
D(COR)	0.2657 (0.5062)	COR	-0.1665 (0.3635)
D(COR(-1))	1.1736*** (0.5667)	COR(-1)	1.0517** (0.4610)
D(EDU)	0.2848 (3.7274)	EDU	3.5916 (3.1118)
D(EDU(-1))	-8.2656 (4.9918)	EDU(-1)	-4.6543 (3.1311)
D(GOG)	-1.4612** (0.4973)	GOG	-1.4759* (0.4484)
D(GOG(-1))	-0.3287** (0.3469)	GOG(-1)	-0.4395 (0.2699)
D(INS)	0.3727 (0.4002)	INS	0.0894 (0.2643)
D(INS(-1))	0.6699 (0.3624)	INS(-1)	-0.3257 (0.2096)
D(RUL)	-1.5168*** (0.7447)	RUL	-0.7375 (0.4549)
D(RUL(-1))	1.1606 (0.6603)	RUL(-1)	0.7626 (0.5249)
D(SCT)	-0.0972 (0.3647)	SCT	-0.1308 (0.2579)
D(SCT(-1))	0.3591 (0.3973)	C	-3.9556 (11.9275)
C	0.7752 (1.1682)	R-squared	0.8072
R-squared	0.8330	Adjusted R-squared	0.5757
Adjusted R-squared	0.6431	S.E. of regression	3.4659
S.E. of regression	4.5430	Sum squared residual	120.1224
Sum squared resid	165.1108	Log likelihood	-51.6453
Log likelihood	-53.3879	F-statistic	3.4879
F-statistic	1.6069	Prob(F-statistic)	0.0283
Prob(F-statistic)	0.0542	Mean dependent var	20.2252
Mean dependent var	0.0283	S.D. dependent var	5.3210
S.D. dependent var	5.3286	Akaike info criterion	5.6213
Akaike info criterion	6.1262	Schwarz criterion	6.263130
Schwarz criterion	6.8205	Hannan-Quinn criter.	5.782740
Hannan-Quinn criter.	6.2897	Durbin-Watson stat	2.067309
Durbin-Watson stat	2.2497		

*, **, *** Significant at 1%, 5% and 10% level
Standard Errors are in Parenthesis

From the result in table 4, the previous poverty level directly impacted the current poverty level in the short run and long run. Corrupt practices in the current period worsen the poverty level in the short run but reduce the poverty level in the long run. However, corrupt practices over the years (represented by a year-lag of corruption D(COR(-1)) worsened the poverty level in the short-run and the long-run. Both the short-run and the long-run results are significant. Accumulated education over the years had a declining effect on poverty. That is education acquired over the years will reduce the poverty level in Nigeria. However, education acquired in the current year does not appear to have a declining effect on the poverty level. Good governance over the years represented by D(GOG(-1)) and in the current year has a declining effect on the level of poverty in Nigeria both in the short-run and the long-run. This implies that good governance both in the past and current year reduces the poverty level in Nigeria. The coefficients of good governance over the years are significant in the short-run and the long-run while only the short-run coefficient is significant for the current period results. Poor public management defined by corruption and lack of prudence in public life continues to hold Nigeria hostage and makes good governance difficult. This is corroborated by Ugoani (2020) who found a significant positive correlation between good governance and good management. The results for institutional quality in the short-run and the long-run do not agree with the theoretical expectation. The results, though not significant, imply that institutional quality worsens the poverty level in Nigeria. This may be due to poor institutional quality in Nigeria. Hence, using the categorization of quality of the institution in Nigeria according to the ranking scores, the implication that institutional quality worsens the poverty level in Nigeria is in order, all things being equal. This could be further explained by the findings of Olanrewaju, Tella, and Adesoye (2019) who argued that though the effects of

institutional quality could vary in an economy, institutional quality is a dominant driving force behind inclusive growth, thus, beyond the liberal democratic threshold, institutional quality is needed to harness the human capital resource-base.

Rule of law and security level in current year reduce poverty level both in the short-run and the long-run. Though, only the current short-run result is significant. Hence, the supremacy of the rule of law and adequate security will reduce the current poverty level in Nigeria. These results agreed with the findings of Heshmati and Kim (2017), Oladipo (2016), Umaru et.al, (2014), Acemoglu et.al, (2014), Jamo, (2013), and Gerring et.al, (2007) who established favourable effects of the democratic government on poverty and its growing effects on the economy. The coefficient of determination (R2) and its adjusted-R2 in the short-run and the long-run are 0.83 and 0.64 and 0.80 and 0.57 respectively implying goodness of fits for the model. Both show that at least 50% of the changes in poverty level in Nigeria are accounted for by corruption level, rule of law, institutional quality, education, security, and good governance. The overall regression (F-Test) results are also significant at the 5% level. The Durbin-Watson statistic of 2.24 for the short run result and 2.06 for the long run result indicate the absence of auto-correlation.

The Auto-regressive Redistributed Lag (Bounds Testing) Approach was further used to test for the long-run relationship between democracy and quality of life in Nigeria. From table 5, the value of the F-statistics is greater than the 5% critical value bound of the Pesaran critical value. Therefore we conclude that corruption, good governance, education, institutional quality, rule of law, and security have a long-run impact on the quality of life in Nigeria.

Table 5: F-Bound Test Result

Panel A		
Test Statistic	**Value**	**K**
F-statistic	9.653679	6
Panel B	**Pesaran *et al.* (2001) critical values**	
Critical Value Bounds	**I(0)**	**I(1)**
(at 5% Significance Level)	2.56	3.49

Source: Author's Computation (2021)

4.3 Causality between Democracy and Quality of life in Nigeria

Table 6 presents the result of the Granger-causality test between democracy and quality of life in Nigeria. The result shows an absence of causality between democracy and good governance, education, institution quality, rule of law, and security. However, there is a bi-causality relationship between corruption and quality of life. That is corruption granger-cause quality of life and quality of life granger-cause corruption. This means that corruption causes poverty and poverty causes corruption in Nigeria, all things being equal. Hence, the high level of poverty is due to the high level of corruption and vice versa in Nigeria.

TABLE 6: Causality Test

Pairwise Granger-Causality Tests			
Null Hypothesis:	Obs	F-Statistic	Prob.
CORRUPTION does not Granger Cause A QUALITY_OF_LIFE	26	3.73044	0.0454*
AQUALITY_OF_LIFE does not Granger Cause CORRUPTION		3.00962	0.0760*
EDUCATION does not Granger Cause AQUALITY_OF_LIFE	26	1.16610	0.3353
AQUALITY_OF_LIFE does not Granger Cause EDUCATION		0.82454	0.4552
GOOD_GOVERNANCE does not Granger Cause AQUALITY_OF_LIFE	26	0.52835	0.5990
AQUALITY_OF_LIFE does not Granger Cause GOOD_GOVERNANCE		1.80354	0.1948
INSTITUTION does not Granger Cause AQUALITY_OF_LIFE	26	0.92386	0.4160
AQUALITY_OF_LIFE does not Granger Cause INSTITUTION		1.75855	0.2022
RULE_OF_LAW does not Granger Cause AQUALITY_OF_LIFE	26	1.59802	0.2312
AQUALITY_OF_LIFE does not Granger Cause RULE_OF_LAW		1.45311	0.2615
SECURITY does not Granger Cause AQUALITY_OF_LIFE	26	0.39266	0.6812
AQUALITY_OF_LIFE does not Granger Cause SECURITY		0.14203	0.8686

Source: Author's computation, 2021

5. Conclusion

This study examined the impact of democracy on the quality of life in Nigeria from 1979-to 1983 and from 1999 to 2020. The study shows that democracy has both negative and positive effects on the quality of life in the short-run and the long-run in Nigeria. The corrupt practices over the years worsened the poverty level in the short-run and the long-run. The institutional quality worsens the poverty level and hence reduces the quality of life in Nigeria. Corrupt practices were found to worsen the poverty level with increasing poverty level breeding more corruption. Therefore, the government needs to ensure the supremacy of the rule of law, eschew corrupt practices, and guarantee the security of life and property to foster good institutions for democracy to reduce poverty in Nigeria.

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Revisiting The Export-led Growth Hypothesis In Nigeria: Sectoral Non-oil Exports And Ex-ante Perspectives

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Abstract

This paper revisits the export-led growth hypothesis from the perspectives of the different sectors of non-oil exports. Using the ARDL modelling framework, it explores ex-post and ex-ante procedures in its empirical analysis. Covering the period between 1980 and 2020, the paper shows that in addition to the growth process reacting differently to different sectors of non-oil exports, the non-oil exports based in the services sector are relatively the most important in the pathway to the goal of diversification. Thus, while non-oil exports generally can enhance the growth process, generalising the significance or magnitude of that potential might undermine the significance of the non-oil sector that matters most in the quest for diversification of the Nigerian economy.

Keywords: *Exports; Export-led growth; Non-oil exports; diversification; ex-ante*

JEL Classification: *C32; F41; 047; R11*

Introduction

The export or exportation process has been described as key to the growth and development of any nation. It is repeatedly portrayed in the literature as export-led growth, where exports are said to provide the impetus for growth and serve as a catalyst for the overall development of an economy (Sheridan, 2014; Adenugba & Dipo, 2013). In addition to acquiring foreign exchange that improves reserves, other benefits of exporting goods and services include improving the balance of payment position, creating employment, and developing export-oriented industries in the manufacturing sector. Countries that adopt robust export policies are expected to move their economies to higher economic growth and development (Oyetade et al., 2020). However, despite the increasing theoretical and empirical evidence supporting the role of exports in growth performance, the slow growth process associated with oil-endowed economies has continued to fuel doubts regarding the efficacy of export-led growth as a policy for economic development.

From the above, it seems to suggest that the validity or otherwise of the export-led growth hypothesis might be sensitive to the country's economic structure being investigated. Prior to the discovery of oil in Nigeria, for example, more than 70.0 per cent of the country's rural population tended to be engaged in one type of agricultural activity. However, with the oil boom of 1973–74, the structure of the Nigerian economy changed drastically, with a significant decline in the share of non-oil exports to the economy. In particular, this has been attributed to demand and the money-spinning nature of oil exports, which makes them more profitable than proceeds from the exportation of non-oil commodities. Consequently, the Nigerian economy has continued to focus on the petroleum sector, thereby paying little attention to the other sectors of the economy.

Nevertheless, while proceeds from oil export usually flow into the economy positively via the revenue channel, it is instructive that such a revenue stream is usually characterised by uncertainty given the exhaustible, volatile, and unpredictable nature of the proceeds from oil export. In fact, given that crude oil will eventually deplete with time, it indicates that the Nigerian economy's over-dependence on crude oil is not sustainable. More so, the vagaries of the oil market have resulted in a significant decline in earnings because the price of oil is exogenously determined. Thus, one of the major policy concerns over the years has been how to expand non-oil exports in an attempt to diversify the nation's export

base and increase its contribution to the Gross Domestic Product (GDP). Notable in this regard is the abolition of marketing boards and several export expansion schemes, such as establishing the Nigerian Export-Import Bank (NEXIM) and establishing the National Export Promotion Council (NEPC).

Other related policy initiatives geared towards the promotion of non-oil exports are the National Economic Empowerment and Development Strategy (NEEDS), National Industrial Revolution Plan (NIRP), and Agricultural Transformation Plans (ATP), among others (Ogunkola & Oyejide, 2001). Despite the growing number of export promotion policies, the oil sector of the economy has continued to dominate the country's export activities. In this light, the export promotion policy stance, which also emphasises the diversification of the economy, is not yielding the expected results. This has continued to fuel doubts about the viability of non-oil exports as a catalyst for economic growth. However, what is not obvious is whether this position can be generalised for different sectors of non-oil exports.

For instance, the bulk of the extant studies (Zoramawa et al., 2020; Badejo et al., 2018; Olayungbo & Olayemi, 2018; Vincent, 2017; Anthony-Orji et al., 2017) that have investigated the impact of non-oil exports predominantly focus on the agricultural segment of the non-export. Secondly, previous studies on the subject matter are predominantly ex-post. However, any attempt to provide policymakers with insights on the future path of non-oil exports' potential contribution to the economy cannot be made in isolation from an adequate understanding of non-oil exports' forecasting power in the predictability of the growth process. Therefore, the contributions of this study to the literature are twofold.

First, beyond the quest to revisit the export-led growth hypothesis from the perspective of non-oil exports, this study innovatively tests whether the hypothesis holds differently for different sectors of non-oil exports. The underlying motivation here is to ensure that export policies are geared toward the economic sector in which the impact of an increase in export demand will be both desirable and significant. Secondly, to the best of our understanding, this study is the first to have explored an ex-ante procedure to test the forecasting power of non-oil exports in the predictability of the future path of the growth process in Nigeria. In view of this, among other findings, this study provides policymakers with evidence-based insights on which of the country's non-oil sectors matter most in the pathway to the diversification of its economy.

In addition to this introductory section, the remaining sections of the paper include: literature review in section 2; model specification in section 3; data and methodology in section 4; result presentation and discussions in section 5; and conclusion and policy prescription in section 6.

2. Literature Review

2.1 Theoretical framework

The export-led growth theory has remained the theoretical workhorse in the literature for analysing the nexus dynamics between economic growth and exports. The export-led growth theory hypothesises a positive relationship between economic growth and exports, predicated on the assumption that factor productivity is higher in the exportable sector than in the non-exportable. Thus, any export promotion policies that induce a reallocation of factors of production from the other sectors of the economy into exportable products are predicted to impact aggregate GDP positively. In technical terms, the theory assumes that the economy is divided into two sectors, namely, exportable (X) and non-tradable (N), each having the usual neoclassical properties as demonstrated in the following.

$$N = F(K_N, L_N, X) \quad (1)$$

$$X = G(K_X, L_X) \quad (2)$$

where K_i and L_i denote the quantity of capital and labour used in each sector, such that $i = X, N$. The inclusion of the exportable output into the non-tradable production function where $F_X > 0$ captures the externality effect mentioned above. On the other hand, the hypothesis of a factor productivity differential is represented by the following condition,

$$\frac{G_K}{F_K} = \frac{G_L}{F_L} = 1 + \gamma \quad (3)$$

where G_K and F_K denote the marginal product of capital in each sector, respectively, and G_L and F_L are the marginal production of labour in each sector. The term is a positive constant indicating the extent to which factor productivities in the exportable sector are higher than in the non-tradable sector. This, however, is likely to reflect a disequilibrium situation where static gains can be achieved by reallocating resources from one activity to the other or the existence of taxes or other inter-sectoral distortions that negatively affect exportable goods. Since, total output is only the sum of production in both activities, as demonstrated below.

$$Y = X + N \quad (4)$$

Differentiating equation (4) and using equations (1) through to (3) will yield the following expression of aggregate GDP growth.

$$\frac{Y}{Y}=\alpha\frac{I}{Y}+\beta\frac{L}{L}+\left[F_X+\frac{\gamma}{1+\gamma}\right]\frac{X}{Y}\frac{X}{X} \quad (5)$$

where I/Y is the investment-output ratio, L/L is the growth rate of employment and X/Y is an export-output ratio. The coefficients α and β according to Feder (1982) (NR) measures the marginal product of capital and labour in the non-tradable sector and not those in the economy as a whole.

At this juncture, it is instructive that the presence of the growth rate of exports in the representation in equation (5) is particularly of interest to this present study as it distinguishes the model from the standard growth accounting equation. Due to inter-sectoral spillovers and productivity differentials, export appears as an independent factor that pushes the rate of growth of output beyond what is determined by the accumulation of capital and labour.

2.2 Empirical literature

There have been increasing empirical studies on the nexus between economic growth and exports. Extant studies can be categorised into two strands of literature: The first includes studies generally motivated by the export-led growth hypothesis, irrespective of the investigated country's economic structure. The second category includes studies whose concerns are similar to those expressed in this study, which is motivated by an appeal to provide evidence-based insight into the quest of oil-exporting dependent economies to promote the exporting potential of their non-oil sectors.

Starting with the former, Tang et al., (2016) re-investigated the export-led growth hypothesis for Asia's Four Little Dragons and concluded that export-led growth in each of the four economies was not stable over their respective periods of analysis. In a similar development Ee (2016) examines the validity of the export-led growth hypothesis in selected Sub-Saharan African countries and concludes that an export-oriented growth strategy is valid in the SSA countries (Shafiullah et al., 2016; Khayati, 2019).

With respect to studies that have considered the subject matter from the perspective of non-oil exports, Mohsen (2015) examined the role of oil and non-oil exports using the case of the Syrian economy and concluded that, compared to non-oil exports, oil exports have the most significant effect on the GDP. However, Aljebrin (2017) favoured an ordinary least square-based error correction model to support the hypothesis of a positive relationship between non-oil economic growth and non-oil exports with Saudi Arabia as the case study (see also Aljebrin, 2020).

On Nigerian-based studies, the majority of the previous studies mainly focus on the country's total exports, which by aggregation are dominated by the oil sector of the economy. Even the few notable exceptions, namely, Zoramawa et al., (2020), Badejo et al., (2018), Olayungbo & Olayemi (2018), Vincent (2017), Kromtit et al., (2017), among others, predominantly focus on a particular segment of non-oil exports (i.e., agricultural exports). Due to the fact this sector in question was largely unexplored, the theoretical and empirical points of whether economic growth responds differently to non-oil exports of different non-oil sectors, namely, the agricultural sector, manufacturing sector, and services sector, among others, always remained scanty.

Thus, compared to the majority of the previous studies, this present study reinvestigates the validity of the export-led growth hypothesis from the perspective of sectoral non-oil exports. Also, it further expands the literature beyond the usual ex-post approach to include the ex-ante procedure. The innovation in this regard is to test the forecasting power of non-oil exports in the predictability of the future path of the country's economic growth amidst the quest for diversification of the economy.

3. Model Specification

The export-led growth model (ELGM) in the context of this study is explored via an extended aggregate production function. Following the Solow (1956) and Swan (1956) procedure, equation (6) is our baseline model, where economic growth (YG) is expressed as a function of capital (K) and labour (L).

$$YG = K^{\alpha}(AL)^{\beta} \quad (6)$$

where YG represents total output produced in an economy, A denotes factor(s) that affects a country's level of technology, K represents a country's available total capital stock (both physical and human) L represents the total productive labour force in the economy. The parameters (α & β) represent elasticity of capital and labor, respectively. As shown below, the model could be re-specified in an estimable and log linear form with K disaggregated into physical and human capital.

$$\log YG = \delta + \alpha_{PK}\log PK + \alpha_{HK}\log HK + \beta\log LAB + \varepsilon_t \quad (7)$$

where λ is log of A with K partitioned into physical capital (PK) and human capital (HK) and both expressed in log form. To accommodate the hypothesis of export-led growth, the empirical model in equation (7) is usually expanded to control for exports. However, Nigeria's current policies have continued to emphasize the diversification of the economy from over-reliance on oil to non-oil; hence, the export component of this study is the non-oil export.

$$\log YG = \delta + \alpha_{PK} \log PK + \alpha_{HK} \log HK + \beta \log LAB + \lambda \log NXP + \varepsilon_t \quad (8)$$

Equation (8) is the modified export-led growth model infused into the augmented variant of Solow growth model that enables us to expand the conventional aggregate production function to include the role of non-oil export in the context of the Nigerian economy.

Unlike the previous studies, the non-oil export will be captured from the aggregate and disaggregated perspectives. We further control for exchange rate (EXR) and trade openness (TOP) in the nexus. With these additions, equation (3.3) was further expanded as follows:

$$\log YG = \delta + \alpha_{PK} \log PK + \alpha_{HK} \log HK + \beta \log LAB + \lambda \log NXP + \gamma \log X + \varepsilon_t \quad (9)$$

where X is a vector denoting each of the additional control variables in the model.

Theoretically, economic growth is predicted to respond positively to both physical and human capital as well as labour ($\alpha_{PK} > 0 \alpha_{HK} > 0$, and $\beta > 0$). Also, an increase in non-export is expected to result in increased output growth; thus, we hypothesised a positive impact of non-oil export on economic growth such that $\lambda > 0$. With respect to the control variables under consideration, we expect a decrease in the exchange rate (implying an appreciation of the exchange rate) is expected to reduce the level of real output and the reverse is likely to be the case for exchange rate depreciation (i.e. $0 < \gamma > 0$). Similarly, trade openness may have positive or negative impact on economic growth depending on some economic characteristics of the economy being investigated.

4. Data and Methodology

4.1 Variable description and data source

Data used in this research are in annual frequency covering the period between 1980 and 2020, totaling 41 observations. Economic growth (YG) and non-oil exports (NXP) are key variables of interest. Starting with the former, log of real GDP reflecting the actual value of all locally manufactured goods and services in Nigeria was used as a proxy for economic growth. Non-oil export in the context of this study is measured as a log of total non-oil exports (TNXP), log of agricultural export (AXP), log of manufacturing exports (MXP), and log of services export (SXP).

In addition, we control for some conventional determinants of economic growth, namely, physical capital (PK) measured as log of gross fixed capital formation, human capital (HK) measured in terms of secondary school enrolment as a ratio of gross school enrolment. In contrast, Labour (LAB) is measured as log of total labor force. Other determining factor of economic growth included in the model are: log of the naira exchange rate (EXR) with US dollar as the reference currency and trade openness (TOP) measured as the sum of export and import as a ratio of GDP.

The total and disaggregated non-oil exports data were sourced from UNCTAD and the WTO online database. However, data for economic growth (YG), physical capital (PK), human capital (HK), labour force (LAB), exchange rate (EXR) and trade openness (TOP) were sourced from the online database of World Development Indicator WDI, (2020). Overall, variables used for empirical analysis in this study are preferred based on their theoretical significance, performance measures of the economy, as well as their uses and discoveries in the previous empirical literature.

4.2 Methodology

To capture the dynamics of the impact of non-oil exports on economic growth, this study gave preference to the Auto-regressive Distributed Lag (ARDL) model as the most appropriate estimation technique. The motivation for the choice of ARDL model compared to other alternative methods in the literature hinge on the fact that the model can be applied irrespective of whether the variables are stationary or become stationary as a result of the first difference. According to Pesaran and Shin (2001), the choice of the optimal ARDL model involves automatic correction of the residual serial correlation and of the endogeneity conundrum. Furthermore, the relationship between economic growth (YG) and non-oil export (NXP) can be written in ARDL framework as below.

$$\Delta \ln YG_t = \varphi + \sum_{j=1}^{p} \alpha_{1j} \Delta \ln YG_{t-j} + \sum_{i=0}^{q} \alpha_{2i} \Delta \ln NXP_{t-i} + \sum_{i=0}^{k} \alpha_{3i} \Delta X_{t-i} + \beta_1 \ln YG_{t-1} + \beta_2 \ln NXP_{t-1} + \beta_3 \ln X_{t-1} + \varepsilon_t \quad (10)$$

where YG and NXP remain as earlier defined while the term X is a vector representing all other determinants of economic growth including physical capital (PK), human capital (HK), labour (LAB), exchange rate (EXR), and trade openness (TOP). More importantly, the NXP, as earlier established, is captured singly both from the perspectives of total non-oil export (TNXP) and sectoral based non-oil exports such as agricultural sector export (AXP), manufacturing sector exports (MXP), and services sector exports (SXP). The long-run parameters for the intercept and slope coefficients are computed as: , $-\frac{\varphi}{\beta_1}, -\frac{\beta_2}{\beta_1}$ and $-\frac{\beta_3}{\beta_1}$. However, since in the long-run it is assumed that $\Delta Y_{t-i} = 0$ and $\Delta(NXP, X)_{t-i} = 0$, and respectively, then the short-run estimates are obtained as . α_{1j}, α_{2i} and α_{3i} .

Since the variables in first difference can accommodate more than one lag, determining the optimal lag combination for the ARDL becomes necessary. The optimal lag length was selected using Schwartz Information Criterion (SIC). The lag combination with the least value of the chosen criterion among the competing lag orders is considered the optimal lag. Consequently, the preferred ARDL model is used to test for long-run relationship in the model. This approach of testing for cointegration as earlier described is referred to as bounds testing as it involves the upper and lower bounds. The test follows an distribution such that, if the calculated F-statistic is greater than the upper bound, then there is cointegration; if it is less than the lower bound, there is no cointegration and if it lies in between the two bounds, then, the test is considered inconclusive.

Equation (10) can be re-specified to include an error correction term as follows:

$$\Delta \ln YG_t = \varphi + \xi ECT_{t-1} + \sum_{j=1}^{p} \alpha_{1j} \Delta \ln YG_{t-j} + \sum_{i=0}^{q} \alpha_{2i} \Delta \ln NXP_{t-i} + \sum_{i=0}^{k} \alpha_{3i} \Delta X_{t-i} + \varepsilon_t \quad (11)$$

where the term ECT_{t-1} is the linear error correction term while the coefficient ξ represent the speed of adjustment to equilibrium level. If the value of the coefficient is in the (-1, 0) range, then the error correction mechanism is steady and ECT helps to adjust the long-run relationship due to the impact of a specific exogenous shock. In the case of positive ξ coefficient, then the ECT model leads to the model deviation from the long-run equilibrium. If those ratios are closer to 0, then the exogenous shock adjustment is performed at low speed, while the closeness to -1 corresponds to a high shock adjustment in one period taken into account (for example, one year in the case of annual data, a quarter for quarterly data, among others).

One of the main contributions of this study is to determine the forecasting power of non-oil export variable in the predictability of the growth process. To achieve this, we employed the Root Mean Square Error (RMSE) method of evaluating the forecast performance of a model to determine which non-oil exports sector is the most accurate for forecasting the future path of economic growth in Nigeria. We further complement the RMSE method with the Adjusted Root Mean Square Error (ARMSE) developed by Moosa and Burns (2012) for consistent and robustness purposes. The RMSE and ARMSE will be computed for both the in-sample and out-of-sample forecasts. Mathematically, if the full-sample period is defined as where is the in-sample period while is the forecast horizon, then the RMSE for the two forecast periods can be calculated as follows:

In-Sample: $$RMSE = \sqrt{\frac{1}{m}\sum_{t=1}^{m}(\pi_t - \pi_t)^2} \quad (12a)$$

Out-of-Sample: $$RMSE = \sqrt{\frac{1}{k}\sum_{t=1}^{k}(\pi_t - \pi_t)^2} \quad (12b)$$

To measure forecasting accuracy, we also adopt the Moosa and Burns (2012) approach. It is constructed by adjusting the conventional RMSE to consider the ability of the model to predict the direction of change. The ARMSE is calculated using the given formula:

In-Sample: $$ARMSE = \sqrt{\frac{CR}{m}\sum_{t=1}^{m}(\hat{\pi}_t - \pi_t)^2} \quad (13a)$$

Out-of-Sample: $$ARMSE = \sqrt{\frac{CR}{k}\sum_{t=1}^{k}(\hat{\pi}_t - \pi_t)^2} \quad (13b)$$

where CR is the confusion rate computed as , $CR = 1 - DA$, and DA , which is the direction accuracy, is calculated correspondingly for the in-sample and out-of-sample as:

In-Sample: $$DA = \frac{1}{m}\sum_{t=1}^{m} a_t \quad (14a)$$

Out-of-Sample: $$DA = \frac{1}{k}\sum_{t=1}^{k} a_t \quad (14b)$$

where $a = \begin{cases} 1 & if \begin{cases} (\hat{\pi}_{t+1} - \pi_t)(\hat{\pi}_{t+1} - \pi_t) > 0 \\ (\hat{\pi}_{t+1} - \pi_t)(\hat{\pi}_{t+1} - \pi_t) < 0 \end{cases} \\ 0 \end{cases}$.

If two models have equal RMSEs, the model with a higher CR should have a higher ARMSE (Moosa and Burns, 2012). A good property of ARMSE is that it is not biased towards measures of either magnitude (RMSE) or direction (CR), Moosa and Burns (2012).

In consistent with the standard practice in the literature, other variants of forecast performance measures further considered in this study are Mean Square Error (MSE) and Mean Average Error. The MSE, in particular, can be expressed mathematically as:

MSE - $1/N\sum_{t=1}^{T}(\hat{y}_t - y_t)^2$ where N is the number of predictions used in computing the mean with $\hat{y}_t$ and y_t denoting the fitted and actual values of economic growth, respectively.

5. Result Presentation

5.1 Preliminary results

Presented in Table 1 are descriptive statistics of the variables under consideration. The table's first layer contains statistical features of economic growth (YG) and its conventional determinants, while the second layer of the table contains summary statistics on aggregate and disaggregated non-oil export variables. The mean statistic on YG shows that Nigeria's average annual economic growth, measured as real GDP in billions of US dollars, is 234.14 for the period between 1980 and 2020. However, the average fixed capital formation as measured for physical capital (PK) was $57.02 billion, while the average secondary school enrolment, a measure for human capital, was 31.0 per cent of the total school enrolment. Although the maximum naira exchanged for one dollar between 1980 and 2020 was N307.37, the annual naira/USD exchange rate has been less than N100 on average over the last four decades.

The mean statistic for non-oil exports shows that the average total non-oil exports (TNXP) over the period 1980 to 2020 is $36 billion, whereas the supposed major sectors of the economy, namely, agriculture, manufacturing, and services, seem to be merely responsible for $1.44 billion, $1.39 billion, and 1.83 billion of the average total non-oil exports, respectively. The fact that exports from these sectors only represent a meager portion of the country's total non-oil exports may not be unconnected to the fact that fuels and mining and other non-oil minerals dominate the country's non-oil exports.

Table 1: Descriptive/Summary Statistics

	Mean	Max.	Min.	*Std. Dev.*	NStd. Dev.	Skewness	Kurtosis	J-B
Economic Growth (GDP) Variable								
YG	234.14	477.16	72.98	128.86	0.75	2.04	5.42	234.14(0.07)
PK	57.02	123.67	0.08	19.02	0.84	7.20	34.96	57.02(0.00)
HK	31.33	56.21	13.68	8.80	0.77	3.41	4.35	31.33(0.11)
LAB	1892.66	3105.37	673.56	730.41	0.03	1.82	2.39	1892.66(0.30)
EXR	97.18	307.76	0.55	97.69	0.81	2.71	4.62	97.18(0.10)
TOP	32.76	53.28	9.14	12.36	-0.41	2.3	1.99	32.76(0.37)
Non-Oil Export Variables								
TNXP	36.03	116	5.16	32.13	1.13	3.13	8.72	36.03(0.01)
NAXP	1.44	16.57	0.00	3.13	3.52	15.75	362.42	1.44(0.00)
NMXP	1.39	9.37	0.00	2.23	1.9	5.98	39.84	1.39(0.00)
NSXP	1.83	5.03	0.22	1.39	0.79	2.60	4.51	1.83(0.10)

Note: The table presents summary statistics of the variables with individual series expressed in its level form. The terms Min in the table denotes Minimum statistic, Max means Maximum statistic, Std. Dev. denotes standard deviation while NStd. Dev. is the normalised variant of the standard deviation statistic computed as: standard deviation/mean. The values in parenthesis are probability values associated with the reported Jaque-Bera (JB) statistics.

With respect to the standard deviation statistic of the variables, particularly the normalised variant of the statistic (NStd. Dev.), the magnitude of variation in the series seems generally small for economic growth and its conventional determinants but relatively higher for a number of the non-oil export variables. The economic growth variable and its traditional determinants have been relatively stable over time compared to the non-oil export variables. Based on the statistical distribution of the series, all the series appear to be positively skewed. However, the Kurtosis statistic is leptokurtic (fat tail) for some of the series and platykurtic (thin tail) for others. Similarly, the probability values associated with the Jaque Bera statistic seem larger, for instance, more than 0.01, 0.05, and 0.10 for some, and less for others. Overall, the null hypothesis of the normal distribution is rejected for some series but holds for others.

Table 2: Unit root test results

	ADF			ADF-GLS		
Variable	Level	First Difference	I(d)	Level	First Difference	I(d)
YG	-1.3833[a]	2.4381[b]**	I(1)	-1.6053[b]	-4.6924[b]***	I(1)
PK	-1.7132[a]	2.4381[b]***	I(1)	-2.0221[a]**	-	I(0)
HK	-2.0297[a]	-5.4748[b]***	I(1)	-2.8997[b]*	-2.3943**	I(1)
LAB	-9.0917[a]***	-	I(0)	-0.7182[b]	-4.3098[b]***	I(1)
EXR	-2.0563[a]	-5.6845[b]***	I(1)	-1.0702[b]	-5.7241[b]***	I(1)
TOP	-3.3068[b]*	-	I(0)	-2.3057[a]**	-	I(0)
TNXP	-2.5792[a]	-5.6336[b]***	I(1)	-1.9707[b]	-5.3963[b]***	I(1)
AXP	-1.5781[b]	-10.1661[b]***	I(1)	-1.4420[b]	-10.2136[b]***	I(1)
MXP	-4.0510[b]**	-	I(0)	-3.7720[b]**	-	I(0)
SXP	-3.6163[b]**	-	I(0)	-2.7117	-6.5067[b]***	I(1)

Note: The exogenous lags are selected based on SIC while ****, **, * imply that the series is stationary at 1.0 per cent, 5.0 per cent and 10.0 per cent, respectively. The null hypothesis for ADF is that an observable time series is not stationary.

As a pre-condition for analysing time-series data, this study conducts a unit root test on all the individual variables under consideration. The essence is to identify the order of integration of the variables, which is one of the necessary procedures towards validating the appropriateness of the chosen estimation technique. For robustness and consistency purposes, we considered both the basic Augmented Dickey-Fuller (ADF) test and its extended variant, for instance, the Dickey-Fuller GLS test. Both tests were performed via models with constants and models with constants and trends. Starting with the ADF unit root test results, table 2 shows that the null hypothesis of unit root tends to hold for economic growth (YG) and all its traditional determinants, with labor force (LAB) being the only

notable exception. However, while the aggregate non-oil exports were reported as a different series, the results are rather mixed for the disaggregated non-oil exports.

Despite the prominence of the ADF as the workhorse of unit root testing in the literature, the low power associated with the ADF null, particularly when trend is included in the specification, constitutes a major shortcoming for the ADF test. Thus, Eliott, Rothenberg, and Stock (1996) proposed an extension to the ADF, and this augmented variant of the ADF is known as DF-GLS. Also presented in table 2 is the DF-GLS unit root test result. Not only was the DF-GLS intended to supplement and strengthen the finding from the ADF unit root test, but it is instructive that when the two tests' findings conflict, the DF-GLS usually takes precedence. More importantly, the DF-GLS unit root testing results confirmed our previous finding, with the order of integration hovering around I(0) and I(1) regardless of whether the model is constant or with constant and trend. This, among other things, re-enforces our preference for the ARDL technique as the most appropriate to accommodate the mixed order of integration exhibited by the series under consideration.

5.2 Presentation of empirical results

Table 3 shows short- and long-run ARDL estimates of the likely effects of total non-oil exports (TNXP) on Nigerian economic growth. The bound cointegration test results show that the null hypothesis of no cointegration was rejected, thus suggesting a probable long-run relationship between economic growth and non-oil exports. Complementing the bound cointegration test result is the cointegrating equation coefficient, usually represented via the coefficient of the error correction term (ECT). For instance, the coefficient on ECT in table 3 is both correctly signed (i.e., negative sign) and statistically significant such that about 50.0 per cent of the disequilibrium caused by previous years' shock has the potential to converge back to long-run equilibrium in the current year.

Table 3: ARDL estimates on the impact of total non-oil export on economic growth

Long run estimates	Coefficient	Standard Error	T-statistic	P-value
PK_t	0.5130***	0.1156	4.4369	0.0001
HK_t	0.0083*	0.0042	1.9626	0.0587
LAB_t	1.4800*	0.8358	1.7706	0.0864
$TNXP_t$	0.1123**	0.0496	2.2641	0.0307
EXR_t	-0.0451	0.0550	-0.8214	0.4176
TOP_t	-0.0031**	0.0013	-2.4110	0.0220
Short run estimates				
Constant	-3.8979	2.3599	-1.6517	0.1087
ΔYG_{t-1}	-0.5015***	0.1133	-4.4264	0.0001
ΔPK_t	0.2573***	0.0093	2.6132	0.0000
ΔHK_t	0.0041*	0.0021	1.9781	0.0569
ΔLAB_t	0.7422**	0.3105	2.3903	0.0231
$\Delta TNXP_t$	0.0563**	0.0263	2.1393	0.0404
ΔEXR_t	-0.0226	0.0271	-0.8360	0.4095
ΔTOP_t	-0.0031**	0.0013	-2.4110	0.0220
ECT_{t-1}	-0.5015***	0.0119	-4.9827	0.0000
Bound Test Cointegration Results				
Level of Significance	**F-statistic**	**I(0)**	**I(1)**	
10%	5.67***	1.92	2.89	
5%		2.17	3.21	
1%		2.73	3.90	
Diagnostic and Post-Estimation Results				
Adjusted R^2		0.97		
F-statistics		541.2059 (0.0000)		
Autocorrelation test (Q-Statistic)		14.877 (0.097)		
ARCH LM Heteroscedasticity test		0.3171(0.7303)		
Jaque-Bera Normality test		0.7153(0.6992)		

Note: The value in parenthesis represents the probability values for the various post estimation tests performed, while ***, **, and * denote 1.0 percent, 5.0 per cent, and 10.0 per cent significance levels.

In terms of the estimated elasticity of the short-and long-run impacts of total non-oil exports (TNXP) on economic growth, the literature supports the finding of positive and significant impacts of PK, HK, and LAB on economic growth. However, this study further showed that in addition to these traditional determinants of economic growth, a 1.0 per cent increase in non-oil exports has the potential to increase economic growth in Nigeria by 0.11 per cent in the long- run and by 0.06 per cent in the short-run. The evidence of the positive impact of non-oil exports on economic growth finds support in the export-led growth hypothesis and a number of related studies in the literature (see Nwanne, 2014; Vincent, 2017; Badejo et al., 2018; Ogunsanwo et al., 2020; Aljebrin, 2020).

To examine whether the extent to which non-exports matter for economic growth varies for different non-oil sectors, we further disaggregated the non-exports into agricultural exports, manufacturing exports, and services exports. Table 4, for example, shows that a 1.0 per cent increase in agricultural exports (AXP) has the potential to increase economic growth by 0.03 per cent and 0.02 per cent in the long run and short-run, respectively. As with agricultural exports, the empirical estimates in table 5 also show that increasing manufacturing exports by 1.0 per cent will increase economic growth by approximately 0.03 per cent in the long-run and 0.02 per cent in the short-run.

In view of the above, it is reasonable to infer that

agricultural and manufacturing exports have the same potential in terms of the magnitude of their impacts on economic growth. The level of significance of the impacts seem to be statistically more viable when the exports are agriculturally based compared to manufacturing-based exports, particularly in the long run. Service exports appear to have little or no significant impact on economic growth (Table 6), particularly when considering estimates from ex-post analysis. However, a closer examination of the ex-ante results presented in Tables 7 and 8 reveals that the predictive model that includes services exports is the most accurate in predicting growth in Nigeria.

Indeed, while the direction of the relationship between economic growth and agricultural exports, manufacturing exports, and services exports are the same (i.e., a positive relationship), we find the significance of the relationship to be statistically viable when the non-oil export is agricultural-based and/or manufacturing-based, than services exports.

Table 4: ARDL estimates on the impact of agricultural exports on economic growth

Long run estimates	Coefficient	Standard Error	T-statistic	P-value
PK_t	0.5042***	0.1128	4.4697	0.0001
HK_t	0.0100**	0.0038	2.6239	0.0134
LAB_t	0.8246	0.7512	1.0977	0.2808
AXP_t	0.0303**	0.0135	2.2431	0.0322
EXR_t	0.0018	0.0565	0.0323	0.9744
TOP_t	-0.0031	0.0023	-1.3705	0.1803
Short run estimates				
Constant	-1.6362	2.5251	-0.6479	0.5218
ΔYG_{t-1}	-0.5212***	0.1188	-4.3855	0.0001
ΔPK_t	0.2628***	0.0092	2.3944	0.0000
ΔHK_t	0.0052**	0.0019	2.6705	0.0120
ΔLAB_t	0.4298	0.3207	1.3400	0.1900
ΔAXP_t	0.0158*	0.0078	2.0163	0.0525
ΔEXR_t	0.0010	0.0294	0.0322	0.9744
TOP_t	-0.0016	0.0011	-1.4983	0.1442
ECT_{t-1}	-0.5212	0.0125	-4.6733***	0.0000
Bound Test Cointegration Results				
Level of Significance	**F-statistic**	**I(0)**	**I(1)**	
10%	3.38**	1.92	2.89	
5%		2.17	3.21	
1%		2.73	3.90	
Diagnostic and Post-Estimation Results				
Adjusted R^2		0.97		
F-statistics		533.3729 (0.0000)		
Autocorrelation test (Q-Statistic)		10.901 (0.114)		
ARCH LM Heteroscedasticity test		0.3383 (0.7153)		
Jaque-Bera Normality test		2.2416 (0.3260)		

Note: The value in parenthesis represents the probability values for the various post estimation tests performed, while ***, **, and * denote 1.0 per cent, 5.0 per cent, and 10.0 per cent significance levels.

Table 5: ARDL estimates the impact of manufacturing exports on economic growth

Long-run estimates	Coefficient	Standard Error	T-statistic	P-value
PK_t	0.5588***	0.1314	4.2504	0.0002
HK_t	0.0123***	0.0040	3.0162	0.0051
LAB_t	1.1409	0.8651	1.3188	0.1969
MXP_t	0.0335*	0.0190	1.7613	0.0880
EXR_t	-0.0321	0.0601	-0.5348	0.5966
TOP_t	-0.0052*	0.0029	-1.8134	0.0795
Short run estimates				
Constant	-2.5497	2.4605	-1.0362	0.3081
ΔYG_{t-1}	-0.4724***	0.1136	-4.1581	0.0002
ΔPK_t	0.2640***	0.0095	2.6960	0.0000
ΔHK_t	0.0058***	0.0019	2.9729	0.0057
ΔLAB_t	0.5389*	0.3157	1.7070	0.0978
ΔMXP_t	0.0158*	0.0093	1.6968	0.0997
ΔEXR_t	-0.0152	0.0280	-0.5425	0.5913
TOP_t	-0.0024**	0.0012	-2.0124	0.0529
ECT_{t-1}	-0.4724***	0.0115	-4.9463	0.0000
Bound Test Cointegration Results				
Level of Significance	**F-statistic**	**I(0)**	**I(1)**	
10%	8.08***	1.92	2.89	
5%		2.17	3.21	
1%		2.73	3.90	
Diagnostic and Post-Estimation Results				
Adjusted R^2		0.97		
F-statistics		515.1992 (0.0000)		
Autocorrelation test (Q-Statistic)		12.530 (0.112)		
ARCH LM Heteroscedasticity test		0.1608 (0.8521)		
Jaque-Bera Normality test		2.5291 (0.2823)		

Note: The value in parenthesis represents the probability values for the various post estimation tests performed, while ***, ** and * denote 1.0 per cent, 5.0 per cent and 10.0 per cent level of significance.

Table 6: ARDL estimates on the impact of services exports on economic growth

Long-run estimates	Coefficient	Standard Error	T-statistic	P-value
PK_t	0.5933***	0.1613	3.6769	0.0009
HK_t	0.0142***	0.0045	3.1085	0.0040
LAB_t	1.5035	1.0242	1.4679	0.1522
SXP_t	0.0355	0.0609	0.5823	0.5646
EXR_t	-0.0637	0.0710	-0.8978	0.3762
TOP_t	-0.0042	0.0030	-1.3774	0.1782
Short run estimates				
Constant	-3.5813	2.5217	-1.4202	0.1655
ΔYG_{t-1}	-0.4386***	0.1200	-3.6543	0.0009
ΔPK_t	0.2602***	0.0098	2.3865	0.0000
ΔHK_t	0.0062***	0.0020	3.0618	0.0045
ΔLAB_t	0.6596***	0.3341	1.9740	0.0573
ΔSXP_t	0.0155	0.0278	0.5586	0.5804
ΔEXR_t	-0.0279	0.0311	-0.8988	0.3757
TOP_t	-0.0018	0.0012	-1.4891	0.1466
ECT_{t-1}	-0.4386***	0.0111	-3.3267	0.0000
Bound Test Cointegration Results				
Level of Significance	**F-statistic**	**I(0)**	**I(1)**	
10%	6.59***	1.92	2.89	
5%		2.17	3.21	
1%		2.73	3.90	
Diagnostic and Post-Estimation Results				
Adjusted R^2		0.98		
F-statistics		475.8647 (0.0000)		
Autocorrelation test (Q-Statistic)		12.702 (0.102)		
ARCH LM Heteroscedasticity test		0.0142(0.9858)		
Jaque-Bera Normality test		1.8740 (0.3918)		

Note: The value in parenthesis represents the probability values for the various post estimation tests performed, while ***, **, and * denote 1.0 per cent, 5.0 per cent, and 10.0 per cent levels of significance.

Since the quest for the diversification of the country's economy is to reset the economic path from its sole reliance on oil to non-oil, this study further examines the forecasting power of non-oil exports in the country's growth process. As demonstrated in the following section, we explore several forecast performance evaluation methods to test the relative forecasting power of non-oil exports in the predictability of economic growth. We consider four alternative methods for evaluating forecasting performance for robustness's sake, namely, RMSE, its adjusted variant (i.e., ARMSE), MSE, and MAE.

Starting with the in-sample forecast performance, the results in Table 7 reveal the model that includes non-oil exports based on the services sector as the most accurate for the in-sample predictability of the growth process. For instance, when the measure of the in-sample forecast performance is RMSE, we find the lowest RMSE value at 0.03547 in the model where the non-export is based on the services sector. The consistency of this finding is evident across all the alternative forecast performance measures considered, such as ARMSE, MSE, and MAE.

Table 7: In-sample forecast performance

Model types	Forecast performance evaluation method			
	RMSE	ARMSE	MSE	MAE
TNXP	0.03833	0.01336	0.00146	0.03495
AXP	0.05093	0.01478	0.00259	0.04145
MXP	0.04818	0.01539	0.00232	0.03862
SXP	0.03547	0.01029	0.00126	0.02739

Note: the smaller the RMSE, ARMSE, MSE & MAE values, the better the forecast accuracy of the predictive model in question

Given that the existence of in-sample predictability is not, by any measure, a prerequisite for out-of-sample forecast gains, we further proceed to determine the out-of-sample forecasting power of non-oil exports in the growth process. Using the rolling window approach, we report results for a forecasting horizon (h) such that (h = 1) is for one year ahead forecast and (h = 3) is for three years ahead. Like the in-sample forecasts, the RMSE, ARMSE, MSE, and MAE reported for out-of-sample forecasts in Table 8 seem to be consistently lower for the predictive models that include non-exports based on the services sector of the economy. On the one hand, this implies that exports from non-oil sectors of the economy are important for accelerating the country's growth. However, when compared to our findings from the ex-post analysis, empirical results from our ex-ante analysis show that the predictive model that includes non-oil exports based on the services sector is the most accurate in terms of predictability of the path to diversification.

Table 8: Out-of-sample forecast performance results

Model types	Forecast performance evaluation method							
	One year ahead forecast (h=1)				Three year ahead forecast (h=3)			
	RMSE	ARMSE	MSE	MAE	RMSE	ARMSE	MSE	MAE
TNXP	0.04117	0.01293	0.00169	0.03409	0.04222	0.01285	0.00178	0.03521
AXP	0.05028	0.01435	0.00253	0.04089	0.06002	0.01659	0.00360	0.04679
MXP	0.04739	0.01489	0.00225	0.03761	0.04934	0.01501	0.00244	0.03953
SXP	0.03507	0.01001	0.00123	0.02715	0.03424	0.00947	0.00177	0.02637

Note: the smaller the RMSE, ARMSE, MSE & MAE values, the better the forecast accuracy of the predictive model in question

6. Conclusion

Motivated by the need to produce an empirical research on the quest to diversify the Nigerian economy from depending on oil to non-oil, this study revisits the export-led growth hypothesis from the perspectives of the different sectors of non-oil exports. Unlike the previous studies, the present study explored not only the ex-post procedure but also an ex-ante approach in its empirical analysis. The essence is to understand which sectors of non-oil exports matter most in the course of driving the country to the path of growth, driving away from sole reliance on oil to non-oil. Empirically, in addition to the finding of the growth process reacting differently to different sectors of non-oil exports, we find non-oil exports based on the services sector to be relatively the most important in the pathway of diversification. Thus, while non-oil exports generally have the potential to enhance the growth process, generalising the significance or magnitude of that potential might undermine the non-oil sector that matters most in the quest for diversification of the economy.

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