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THE FINANCIAL INCLUSIVENESS AND INSTITUTIONAL QUALITY IN NIGERIA

[1]GIDEON O.OLANREWAJU, [2]SHERRIFFDEEN A. TELLA, [3]ADEYEMI A. OGUNDIPE &[4]OLAWUMI A. OSUNDINA

[1,4]Department of Economics, Babcock University,Ilishan-Remo
[3]Department of Finance, Babcock University,Ilishan-Remo
[2]Department of Economics, OlabisiOnabanjo University, Ago-Iwoye

Abstract

The study examines the role of institutional quality on financial inclusion and broad-based productive growth variables employing the Bounds testing approach to co-integration and error correction model within an autoregressive distributed lag (ARDL) framework based on annual secondary time series data from 1998 to 2017.The results of the analysis showed that institutional quality had an overall significant effect on financial inclusion in Nigeria. While all the explanatory variables were found to exert a positive statistically significant effects on finance-inclusive growth link in Nigeria both in the short-run and the long-run, contrary to a-priori theoretical expectation, technology choice index was positively signed.This shows that while the effects of institutional quality could vary widely in an economy, institutional quality appears to be the dominant driving force behind both the broad-based financial systems and productive employment growth. We therefore recommend that institutional improvement beyond the present liberal democratic threshold is much needed to leverage on new technologies by providing innovative banking infrastructure that would effectively expand both physical and digital accesses to finance, and thereby comprehensively integrating millions of Nigerians into productive activities for optimal value-chain finance-growth inclusiveness. Moreover, given her resource human capital base, the adoption of an appropriate development strategy would help a great deal for lifting millions out of poverty, and sizably bridging the inequality gaps. These would address the protracted tripartite socio-economic problems of poverty, inequality and unemployment in line with Lin's growth identification and facilitation hypothesis.

***Keywords:*Financial Inclusion, Development Strategy, Productive Employment, Inclusive Growth, Institutional Quality**
JEL Classification: G21, O14, J21, O43, P28

Introduction

The concept of financial development is fundamental to human capital development and inclusive growth for all economies, and this seems even more critical for developing countries where the financial sector has not been fully developed. While building inclusive financial systems has increasingly become an important objective for policy-makers around the world, financial inclusion, which is the core driver of sustainable economic growth, remains its prime goal and is, therefore, attracting attention of the contemporary international development concerns. Underscoring the fact of positive linkage between inclusive finance and economic development, Sahar Nasr (2014) of the World Bank Group asserted the renewed concerted efforts were being geared towards the formulation and implementation of improved strategies to financially include the unbanked populace for a sustainable broad-based productive employment growth in many developing and emerging economies.

Financial inclusion characterized as the provision of a broad range of high quality financial services, such as savings, credits, insurance, remittances, pensions and other banking/payment services to all bankable households and enterprises at affordable costs, is not an end in itself. Instead, it is only a contingent means to an end, whereby the goal in mind is actually growth with inclusiveness (Demirguc-Gunt&Klapper, 2012). This embraces all initiatives that make formal financial services available, accessible and affordable to all, including the vulnerable and marginalized segments of the society. Its operation is in two folds viz; to enable and empower. By enabling, it ensures that people have the tools to manage and save their money using services such as bank accounts. Whereas, its empowerment equips people with the skills and knowledge so as to make the right financial decisions. Financial exclusion, on the other hand, would mean the inability of the disadvantaged to access formal financial services due to a range of obstacles. These may include long distance to access point, low financial literacy and trust in the financial sector, cumbersome documentation requirements and high cost of financial services, low income and poor financial discipline, among others.

In the literature, the recognition of the lack of financial inclusion retarding development can be traced back to Bagehot (1873), Lewis (1955), Gurley & Shaw (1955) and King & Levine, (1993a & b) who highlight the importance

of formal financial institutions (Banks) in stimulating overall economic activities. More recently, this was consecutively reechoed by world leaders at the United Nations Sustainable Development Summits (2005) and (2015) where vital functions were ascribed to an inclusive financial sector and institutional quality concern, generally termed 'good governance' for the attainment of Millennium Development Goals (MDGs) by the year 2015 and Sustainable Development Goals (SDGs) by the year 2030, respectively.

It is worthwhile to note that these recently adopted worldwide development goals (MDGs and SDGs) had placed institutional quality of the state at the heart of achieving the 'new growth path' of finance-growth inclusiveness. Hence, the long standing 'war' against the ravaging tripartite socio-economic problems of pervasive poverty, huge inequality gaps and worrisome jobless growth especially in most resource-rich developing nations can be successfully fought and won given the state's embedded autonomy and its resilience in terms of capacity and character (Ghatak, 2003; Stiglitz, 2016).Thus, the state institution has always become the only viable agent that has an uncompromised vested interest in ensuring a growth with inclusiveness, creating equitable economic opportunities along with equal access to them by all, particularly those hitherto financially excluded (i.e the poor and the vulnerable households in society) from the growth process.

Notwithstanding an irrefutable research establishing the links between financial development and economic growth in many advanced and Organization for Economic Co-operations and Development (OECD) economies with over 85 per cent as against 42 per cent of the population in most resource-rich but institutional quality-deficit developing countries having access to formal financial services (EFInA, 2018).Meanwhile, it is generally believed that growth inclusiveness would address the tripartite socio-economic problems of poverty, inequality and unemployment which are a direct consequence of financial exclusion and deprivation or marginalization. Meanwhile, attaining such a covetous participatory and benefit-sharing growth process, can largely be determined only by the levels of financial services in terms of availability, accessibility and usage. Otherwise, the most desirable inclusive growth and development in any economy will at best remain elusive without these vital components of financial inclusion (Tella, 2012).

Consequently, the most challenging trend in the world today still remains the need for a broad-based access to finance for productive employment growth and sustainable development. Thus, the concept of inclusive finance becomes critical in effectively tackling the tripartite socio-economic problems of poverty, inequality and unemployment which commonly associated with most low-income sub-Sahara African countries as in other developing economies of the world. Meanwhile, in spite of massive drop in number of the unbanked from 2.5 billion in 2011 to 2 billion in2014, the Global Findex-IMF Financial Access Survey (2017) shows that about 1.7 billion adults around the world still donot have access to formal financial services, and about 75% of poor people were unbanked. However, extending finance access to the vulnerable and marginalized individuals is the first building-block to build a better life for a broad-based segment of society. Access to formal financial services through formal account ownership can enable individuals as well as firms to smooth consumption, manage risks, and invest in education, health and enterprises (World Bank Group, 2019).Thus, at the core of global socio-economic challenges is the need to enhance society'saccess to productive opportunities, particularly the extremely poor's and the vulnerable groups'.

Despite the decades of financial sector liberalizations for 'inclusion', and the 'improved' institutions of political governance in Nigeria, several questions still remain unanswered, or even rather unasked, on the quality of institutional causes of financial inclusion for growth inclusiveness across countries. Namely, what have been the nature and trends of institutional quality, financial inclusion and inclusive growth in Nigeria? How has the quality of institution affected financial inclusion in Nigeria? And to what extent has institutional quality impacted on the link between financial inclusion and a broad-based productive employment growth? Studying therefore the link between a broad-based financial system and institutional quality in resource-rich and labour-abundant developing countries like Nigeria would help a great deal in proffering the tripple-win solution to the aforementioned mounting tripartite socio-economic problems.

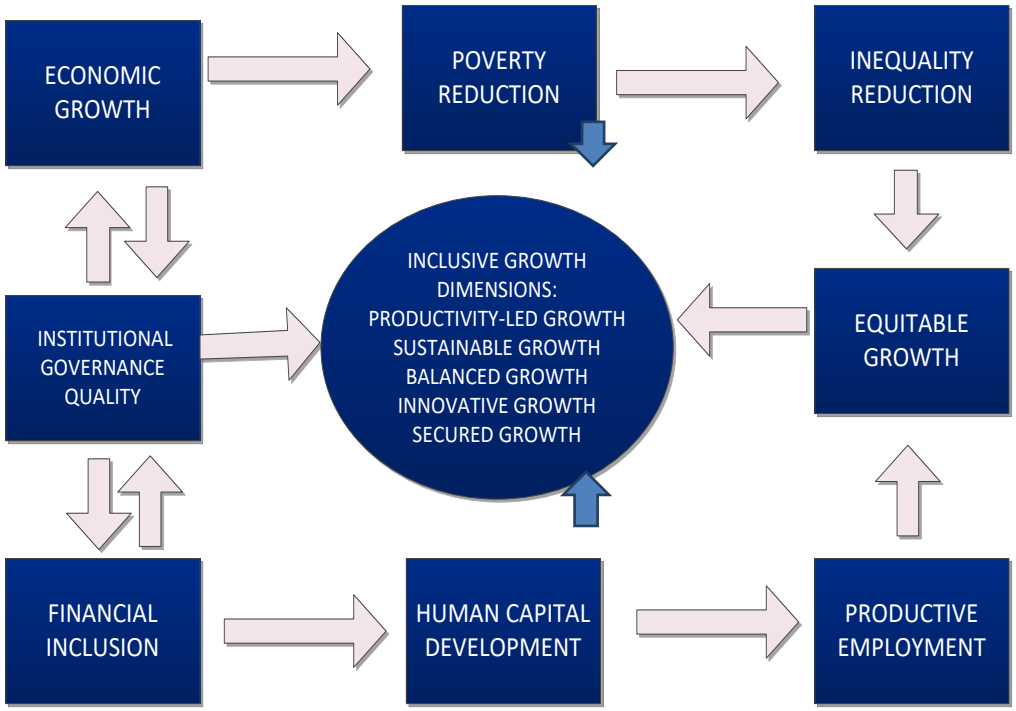
The study is organized as follows: Following the introduction, section 2 reviews the literature on the dynamic link between financial inclusion and inclusive growth as an analytical outcome of institutional quality. Section 3 specifies the base-line model for the achievement of the study's stated

objectives. While Section 4 analyses and discusses the findings, some concluding remarks and policy implications are provided in section 5.

Literature Review

Conceptual Literature

Figure 1 provides the conceptual framework which provides a diagrammatic interpretation of the linkages between the key drivers of inclusive growth in a country. Inevitably, this is a simplification of a more complex relationship between institutional quality and economic development. Nonetheless, it highlights a partial set of relationships upon which this study is premised. The three linkages mostly focused on are: quality institutions of governance to financial inclusion; leading to human capital development and productive employment; andthen to poverty and income inequality reductions, and consequently to the attainment of all inclusive growth dimensions.



Source: Adapted from Vellala, Madala&Chhtopadhyay, (2014)

Figure 1: Conceptual Framework for Inclusive Growth.

Notably, formal financial services everywhere are aberrations to providing substantial amounts of longer-term finance, because their deposits primarily are of a short term nature. Under circumstances of gross imperfections of the formal financial markets in many developing countries, deep government interventions would essentially be needed for the development of financial institutions which specialize in longer-term and inclusive finance as in the cases of Indonesia and Pakistan. In other words, given the resilience of the state institution in terms of capacity and character, governments could create favorable conditions for the emergence for long-term inclusive finance. Moreover, in the context of financial services with strong commercial banking systems, efforts to encourage a sustained broad-based access to formal financial services have also met with convincing success stories in countries like Hong Kong, Malaysia, Bangladesh, Singapore, Brazil, and Mexico, (Vandemoortele*et al.* 2013).

In particular, Nigeria, though endowed with both human and natural resources, spanning across all the six geopolitical zones, the country is still among the poorest nations in the world. After over 60 years of independence and 20 years of uninterrupted democratic rule, coupled with her highly lofty policies and programmes, the nation is yet to register any inclusive growth. The supposedly impressive average economic growth of about 7.0% during 2001 to 2014, the growth was neither inclusive. Whereas, the country continues still facing a high incidence of poverty and worsened inequality gaps, as well as the inordinately rising unemployment rates coupled with the high degree of social deprivation and exclusion. A very grim picture of the trilemma was poignantly painted by the United Kingdom Prime Minister, Mrs Theresa May (2018) noted that, in spite of a resurgent economy, 87 million Nigerian still lived on less than $1.90 per day, making it home to more very poor people than any other nation in the world. Furthermore, unemployment has been on increase consistently, with the rate estimated to be 11.9% in 2005, 12.8% in 2008 rose to 19.7 % in 2009, 23.9% in 2011, and to as high as 27.4%, 29.2%, and 32.3% for 2012, 2015 and 2017, respectively (EFInA, 2018).

Empirical Review

Investigating the role of “something else” (institutions) besidesfactor accumulation, Easterly and Levine (2002) in the Working Paper Series of

Central Bank of Chile found that TFP residual accounts for most of the cross-country and cross-time variation ingrowth. This observation is less consistent with the simple earliest traditional growth models that featurediminishing returns, factor accumulation, some fixed factor of production, and constant returns to scale. The study found thatnational policies have strong link with long-run economic growth rates, and all factorsof production flow to the richest areas, because of high "A" rather than high "K". Thus, the study in a way is relevant to the present study as it suggests 'something' more crucial to explaining sustainable inclusive growth.

Osman & Nabi (2007) employ a bivariate Granger causality tests to investigate the relationship between institutional environment and the banking-growth nexus for the MENA countries. They developed an endogenous model where the institutional environment is captured the judicial system efficiency and the easiness of informal trade. Their findings show that an improvement of the institutional environment: (1) increases the causality direction from banking to economic growth through a reduction of defaulting loan; (2) reduces the interest rate spread; and also shows a bi-directional causality: (1) banking development drives growth in countries with more developed institutional environment; (2) causality runs from economic growth to banking and indicates that a more developed economy have a more developed banking system.

Demirguc-Kunt*et al* (2008) reviews research on access and barriers to finance, using household and firm-level data from previous research, whilst Beck, Demirguc-Kunt and Peria (2006a) empirically investigate barriers to access, using information from 193 banks in 58 countries to develop indicators of physical access, affordability and eligibility barriers to savings, debt and payment services. Both studies note that the main barriers include geographical distance as well as lack of adequate documentation and high fees and minimum account balance. The duo observes that there are limitations of opportunity where potential investments with good prospects are denied finance because of lack of a collateral or network. Meanwhile, the finding has policy implication for the government to strive toward achieving a broad-based financial access.

Taking a closer look at two critical issues of governance and institutional quality measurement and direction of causality between institutional development and economic development in the developing Asian countries, Zhuang, de Dios and Lagman-Marrtin (2010) examine the role of governance and institutions. Applying a simple classification framework under the widely used world governance indicators (WGIs), the authors found that the Asian economies with government effectiveness, regulatory quality, and rule of law scored above the global means and grew faster on average during the period 1998-2008, than those economies below the global means. In effect, their findings are consistent with Levy and Fukuyama (2010) that, improving governance in these three dimensions could be used as potential entry points of development strategies for many other developing economies in the region and elsewhere.

In another study, Tella (2012) examines the challenges and prospects of financing inclusive growth in Nigeria. The author reviews the literature on theoretical constructs of economic growth and development models, including inclusive growth model (various growth models from the classical to the endogenous and inclusive growth). He discovers that while a number of emerging countries (e.g Malaysia, Singapore, Bangladesh, Mexico, and the BRICS'countries with the exception of Russia) could link their development plans to specific theories and models which provides avenue for measurement and evaluations, the Nigerian growth and development programmes since independence are hardly based explicitly on a model. However, he concludes that, the route to sustainable development is financial inclusive growth; and an important policy organ like the Central Bank of Nigeria can direct and re-direct the nation's vision towards inclusive growth that has assisted many developing and emerging countries to overcome the issues of chronic poverty in recent times.

Vandemoortele*et al.* (2013) examines the experiences of four of the BRICS'countries (Brazil, China, India and South Africa). They identify four key factors shaping the countries' patterns of growth: people having access to assets; investment in productive activities; social transfers; and a political economic context where inclusion is a priority. They aver that though these economies can be lauded for their stellar economic growth and resilience through the 2008-2009 financial crises, but scratching beneath the surface it is

evident that not all the people in these countries have benefited equally from growth. Only Brazil found to have managed to reduce both poverty and income inequality, in some cases significantly. This case study argues that the three key factors underpinning per capita growth rates and the country's fall in income inequality are; economic stability; expansion of social protection and social services; and institutional reforms that could guarantee such a growth and development.

It is worth noting that Lin and Chang (2014) recognized that, given the structures of many resource-rich developing nations, trapped in tripartite socio-economic problems of poverty, inequality and joblessness, socio-structural decisions cannot then be clearly assessed in an institutional vacuum. Hence in this paper, we interacted both institutional and macro-structural variables. Guided by the work done on the financial development-inclusive growth link and the belief that an effective state institution must underlie inclusive finance-growth relationship, this paper examines what effects quality institutions of governance have on providing broad-based financial services, including the extremely poor and the most vulnerable in society.

In another study, Camara*et al* (2014) assess a quantitative approach to the determinants of financial inclusion in Perubased on micro-data from surveys. Significant correlations are used to identify thosesocio-economic characteristics that may affect financial inclusion (or exclusion) of householdsand enterprises. The results show that the traditionally more vulnerable groups(women, individuals living in rural areas and young people) are those with the greatestdifficulties in accessing the formal financial system. The study discovers that forenterprises, formality and education stand out as significant factors for financial inclusion. They, therefore, suggest that identification of the individual characteristics would affect financial inclusion and thereby providing usefulempirical evidence for designing policies that promote more inclusive financial systems. The study has relevance to the present study as it gives insight into the problem which the present study sets out to solve.

Similarly, Owusu and Odhiambo (2014) investigate the impact of financial liberalisation policies on sustainable economic growth (GDP index calculated by using Principal Component Analysis (PCA) in Nigeria between 1969 and

2008. The study employs the Autoregressive Distributed Lag (ARDL)-Bounds testing approach and the unrestricted error-correction model (UECM) to co-integration analysis, as popularised by Pesaran, Shin and Smith (2001) to establish the long-run relationship between the relevant time series variables. The empirical results show that the impact of financial liberalization policies on economic growth in Nigeria is positive and statistically significant; both in the short run and in the long run. The study, therefore, recommends that appropriate financial liberalization policies should be pursued in Nigeria in order to foster economic growth. However,the study cautions against the use of the laissez-faire approach to financial reforms, considering the fact that financial market is prone to market failures,

Fadun (2014) examines financial inclusion as a tool for alleviating poverty and redistributing income in developing countries, with special reference to Nigeria. The study, in view of the financial inclusion efforts at the global level, highlights the various financial inclusion strategies developed in Nigeria to decrease the number of Nigerians that are excluded from financial services. Considering the low levels of financial penetration and deepening in developing countries, including Nigeria, financial exclusion still remains an area of great concern, as the study reveal that 39.2 million adult Nigerians representing 46.3% of the adult population of 84.7 million were financially excluded in 2012**.** Further analysis also show that 54.4% of the excluded populations were women, 73.8% were aged less than 45 years, 34% had no formal education, and 80.4% reside in rural areas. The findings indicate that financial inclusion constitutes important tool for alleviating poverty and redistribution of income in developing countries, particularly in Nigeria.

A study by the World Economic Forum (*WEF,* 2015) reveals that access to financial services through formal accounts can enable individuals to have a smooth consumption, manage risk, and invest in education, health and productive activities. Similarly, the World Bank in 2017 noted that there was a strong correlation between account penetration of various countries and their Gross Domestic Product (GDP) per capita. However, while the Nigerian financial services sector is not only heavily dominated by the mainstream financial institutions (DMBs), they are fairly developed and a key employer of labour as well. Thus, the geographical pervasiveness of these banks and their share of total credits to the productive sectors as institutional and functional

vehicle for economic transformation of any country can hardly be over-reemphasized.

Similarly, Obioma and Dada (2015) examine implications of financial inclusion for inclusive growth in Nigeria using a 3SLS estimation technique and a small open economy macro model that links financial inclusion and inclusive growth. The estimation results indicated that financial inclusion, among other variables such as past levels of per capita income; government spending and inflation are significant in explaining inclusive growth in Nigeria. However, since economic growth is never a guarantee for the desirable sustainable inclusive growth, which beyond creating an enabling environment, the catalytic role of a developmental state can hardly be overemphasized. This analysis brings to fore the need to widen the scope of financial inclusion; particularly efforts that can improve access to finance thereby making growth more inclusive in Nigeria.

In another study, Ikhide (2015) reviews some authors' work in the field of finance and growth debate for Africa datingback 30 years. He observes that though most of the literature supports thelink between finance and growth, but the robustness of theevidence seems to have waned mainly in response tofinancial instability occasioned by financial liberalization and excessive credit growth. However, the author stresses that while financial depth mayno longer be strongly correlated with economic growth,the crucial role that access tofinance could play in promoting financial developmentand bootstrapping economic growth in Africa can hardly be over-emphasized. Inparticular, the study thus stresses the role of properly designed microfinance institutions inenhancing access to finance by individuals and MSMEs which would helppromote economic growth and reduce poverty in Africa.

Drawing on an extensive literature, Alemu (2016) uses secondary data to analyze the trends in financial inclusion and to assess the performance and stability of the financial sector in Ethiopian economy. The study notes that despite huge progress of average annual real GDP growth rate of 11 per cent rate between 2003/04 and 2012/13, financial inclusion is still very low owing mainly to physical access and finance constraints caused by the unfavourable financial regulations issued by the NBE, and unreliable and unsustainable source of funds for Developmental Bank of Ethiopia (DBE). The other major

problem is the lack/limited use of technology and innovation in financial service delivery. The capacity of domestic savings in financing the development effort of the country is weak.

Ayinde and Yinusa (2016) carried out a threshold analysis employing the quantile regression technique to investigate the relationship between financial development and inclusive growth in Nigeria for the period 1980-2013. The findings show that the impact of financial development on inclusive growth depends on the measure of the former up to the threshold level of 90^{th} percentile and not beyond; and the direction of causality between financial development and inclusive growth was reversed. Moreover, financial inclusion rather than financial deepening was equally found to positively impact on inclusive growth. However, the study observes that the government intervention poses a detrimental effect on private financial development activities during the period.

Another study on balancing inclusive growth with financial stability in the Nigerian economy, Ajakaiye and Tella (2016) investigate the effects of the existing regulations on the structure of the financial system and specifically on the banking sector in Nigeria. The study notes the existence of foreign banks but with insignificant share of their funds in total assets and liabilities of the banks in Nigeria. In order to promote financial stability and inclusive growth in Nigeria, the authors therefore suggest that effective regulatory framework and policy consistency, financial inclusion initiatives as well as manpower development must be continuously strengthened and sustained.

In a recent biennial survey report on access to financial services in Nigeria, the EFInA (2018) reveals certain economic and financial 'divides' across the six geo-political zones. The results of the Survey indicate that while the financially excluded population grew by 14.9%, from 34.9 million in 2012 to 40.1 million (41.6%) in 2016, the banked population went up by 1.4% in 2018, driven by transaction products. This was due to increase in the number of people who saved with the DMBs given their financial capacity to withstand any economic crisis as well as ability to maintain their customers' acquisition drives at the expense of other formal channels like microfinance banks (MFBs) or insurance (CBN, 2010). Thus, the contribution of MFBs in Nigeria

to formal financial inclusion has been on decrease with adult users reducing by 30.8% between 2012 and 2016.

In the most recent Nigerian systematic diagnostic study by the World Bank Group (2019), about 1.7 billion adults were reported as unbanked, globally. That is, the number of adults population that are without an account at a financial institution or through a mobile money provider. Whereas, owning a bank account is widely popular with the high-income economies, largely, all the unbanked adults live in the developing world, with nearly half live in just seven developing countries namely, Bangladesh, China, India, Indonesia, Mexico, Pakistan and Nigeria.

Notably, studies that have addressed the issues of linkage between financial inclusion and inclusive growth were found to suffer from a number of empirical problems. One major impediment which deserves a special attention is inability to see financial inclusion and inclusive growth as an analytical outcome of institutional quality. Moreover, the failure to acknowledgethe impossibility of 'an inherently exclusive market' as the best inclusive growth strategy; and the supposed evidence showing the superiority of the liberalized financial sector with too much reliance on cross-sectional econometric studies known usually to suffer from defectively contextual concepts and samples heterogeneity. Thus, in effect, no generalizations or testable hypotheses can be drawn from such a handful studies about the impact of institutional quality on financial inclusion and inclusive growth in a resource-rich developing country like Nigeria.

Against these backdrops, this study assesses the effect of institutional quality on the link between financial inclusion and inclusive growth as measured by real GDP per person employed in Nigeria during the period 1998-2017. The study employed the recent Auto-regressive Distributed Lag (ARDL) bounds testing to co-integration technique. Our variables of interest are the constructed composite financial inclusion index (IFI) to measure financial inclusion's three dimensions of availability, accessibility and usage of formal financial services; and real GDP per person employed (RGDPE) as proxy for inclusive growth. Other variables employed are the standardized worldwide composite governance indicators of state institutional effectiveness (GEFe) due to Kaufumann, Kraay and Mastruzzi (2010); the constructed technology

choice index (TCI) as the value-added to labour ratio in manufacturing over the total value-added to aggregate labour force ratio, to measure development strategy. The composite human development index (HDI) for capturing absolute poverty incidence (POV) and the components of income inequality (GINI), literacy rate (LIT) and life expectancy rate (LEX) was also included.

Stylized Facts about Financial Inclusion Spread in Nigeria

The biennially demand-side survey Report of the Enhancing Financial Innovation and Access (EFInA) (2018) reveals that the divergence in the level of financial inclusion across the six geopolitical zones in Nigeria is quite astonishing. For, instance, North East and North West zones with the lowest levels of financial access and inclusion averaged 29 and 30 per cents respectively during the 2010-2016 survey period. Access to formal financial services and inclusion is however relatively noticed to be most progressed in the southern parts of the country with South East and South West respectively averaged 63 and 67 per cents over the survey period. Also, the EFInA Survey consistently discloses that Nigeria lags behind some of its peer African countries withregards to the provision of financial services. This poses serious challenges to nation's inclusive economic growth and sustainable development. For instance, in Table 1, in 2016 and 2018, only about 49% respectively – roughly 47 million and 49 million outof an adult population of - 96.4 million and 99.6 were served by formal financial services, compared to 80% in South Africa and 68% in Namibia (EFInA, 2018).

Table 1Financial inclusion in Nigeria (2008-2018)

	Percentage (%)					***Total Number (Million)***				
	2008	**2010**	**2014**	**2016**	**2018**	**2008**	**2010**	**2014**	**2016**	**2018**
Adult Population	100	100	100	100	100	86.6	84.7	92.6	96.4	99.6
Financially Served	52.5	53.7	60.5	58.4	63.2	41.2	45.5	55.6	56.3	63.0
Financially Excluded	47.5	46.3	39.9	41.6	36.8	45.4	39.2	36.9	40.1	36.6
Formally Served (Included)	23.6	36.3	49.0	48.6	48.6	20.3	30.7	45.4	46.9	48.4
Informally	23.9	17.4	11.9	9.8	14.6	20.7	14.7	10.2	9.4	14.6

Excluded										
Banked	21.1	30.0	36.3	38.3	39.7	18.3	25.4	30.1	36.9	39.5
Formal Other Institutions	2.5	6.3	12.3	10.3	9.0	2.2	5.3	6.7	10.0	8.9

Source: EFInA Access to Financial Services in Nigeria, 2008, 2010, 2014, 2016 & 2018 Surveys.

Meanwhile, between 2008 and 2010, the percentage of "completely excluded" fell from 48%to 46%, while those served by the "informal sector" fell from 24% to 17% (EFInA, 2016). Similarly, "formal other" doubled from 3% to 6% and "formally banked" rose from21% to 36% and 39% in 2008, 2014 and 2018 respectively (EFInA, 2018).

The EFInA's latest survey reports reveals certain economic and financial 'divides' across the six geo-political zones. While financial inclusion is expectedly found to be most progressed in the urban areas, especially in thesouthern parts of the country (see Table 2), the Northern Nigeria is still particularly disadvantaged as 55% and 62% of adults in the North East and North West zones respectively are excluded fromfinancial services as against 19% and 29% for South-west and South-east respectively in 2018. Ratesof formal inclusion range from 78% in the South West Region to only 24% in the North WestRegion. 'Informally included' are more in the North Central region, where 23% and 14% of the adults respectively have access to only informal services in 2010 and 2016.

Table 2 Financial inclusion in Nigeria by geopolitical Zones

Zone	*Formally Banked (%)*			*Formal Other (%)*			*Informally Served (%)*			*Financially Excluded (%)*				*Total (%)*
	2010	**2014**	**2016**	**2010**	**2014**	**2016**	**2010**	**2014**	**2016**	**2010**	**2014**	**2016**	**2018**	
North West	13	35	24	6	5	6	13	4	6	68	56	70	62	100
North Central	27	49	48	6	7	13	23	11	14	44	33	39	31	100
South West	42	63	78	7	8	4	18	7	5	33	25	18	19	100
North East	15	26	25	6	3	13	11	2	14	68	68	62	55	100
South East	41	63	59	6	6	13	21	5	13	32	25	28	29	100
South-South	39	52	55	6	8	12	19	7	14	36	29	33	23	100

Source: EFInA Access to Financial Services in Nigeria, 2010, 2014, 2016 & 2018 Surveys.

Several empirical studies have established a positive correlation between financial development and long-run economic growth (Osman&Nabi, 2007; Demirguc-Kunt*et al* (2008; Demirguc-kunt&Klapper, 2012; Tella, 2012; Fadun, 2014;Owusu&Odhiambo; 2014; CBN, 2015; Ikhide (2015; EFInA, 2018, Olanrewaju, et al. 2019; World Bank, 2019) among others. These studies, however, caution that the transmission mechanism vary from one country to another. Essentially, the financial access and inclusion literature highlights the financing gap through empirical investigations, and stresses the need for flexibility in financial arrangements as well as shift in focus towards promoting productive employment opportunities through innovative entrepreneurial activities capable of stimulating sustainable productivity growth across all sectors of the economy.

The first round of the Nigerian Manufacturing Enterprise Survey (NMES) carried out by UNIDO (2004) to collect both contemporaneous and retrospective data on the performance of Nigerian manufacturing sector, reveal that about 81% of the manufacturing firms admitted facing finance-access constraints; the majority of these firms were deterred from applying for bank

loans due to high interest rates and inadequate collateral; banks were not interested in advancing long-term loans due to high incidence of non-performing loans (NPLs). In a similar study of the Wave-I-Survey carried out also in 2001, 47% of the Nigerian manufacturing firms placed access to finance among the top three problems (finance, power supply, and infrastructure) confronting them. However, access to finance is most often cited productivity constraint confronting both micro-small and medium enterprises (MSMEs) and rural economic agent (households).

Method of Study

The model is rooted in Tobin (1955)'s dynamic aggregative production function. It encompasses both the Coase (2000)'s neo-institutionalism and Lin (2004)'s New Structural Economic theories in which political capability for resources mobilisationand monetary factors are explicitly engendered in the growth process. In its foundational form, the augmented Tobin (1955)'s dynamic aggregative production function is specified as follows:

$$Y_t = (1-T)A_t K_t^{\alpha_1} H_t^{\alpha_2} L_t^{\alpha_3} g \qquad (1)$$

where$Y$ is output. T refers to the preferred technology choice: with strong institutions, the value of technology choice is less than zero, but with weak institution, its value is greater than zero. A is the efficiency parameter or level of technical progress meant to augment physical capital (K) such as machinery, building and finance; human capital, both skilled (H) and unskilledlabour (L), and $\alpha_1 + \alpha_2 + \alpha_3 = 1$ exhibiting the standard assumption of constant return to scale. $g$represents a vector of the country's institutional capital comprising of the worldwide six dimensions of governance indicators such as rule of law, voice and accountability, government effectiveness, political stability, regulatory quality and levels of corruption. In addition to capacities and capabilities of the state to determine development strategy in developing countries, financial inclusion can be affected by other factors. Factors related to financial policy are those included in the model. Thus, the econometric equation of financial inclusion function is expressed by the semi-logged empirical model, linking institutional-led productive employment growth to financial inclusion equation (2):

$$IFI_t = \alpha + \gamma IFI_{t-1} + \beta_1 \ln RGDPE_{t-1} + \beta_2 GEFe_t + \beta_3 TCI_t + \beta_4 HDI + \varepsilon_t \quad (2)$$

From equation(2), index of financial inclusion was a constructed composite indicator of the three financial inclusion dimensions (availability, accessibility and usage) of formal financial services. Inclusive growth was measured by the real GDP per person employed (*RGDPE*); As a proxy for institutional quality, *GEFe*denotes the standardized worldwide composite governance indicator average; *TCI* as a measure for preferred development strategy; *HDI* was used as a composite human development indicator capturing poverty, inequality, education and health care; and other interacted variables. The annual secondary time series data on *RGDPE, IFI, TCI, HDI* and *GEFe* were obtained from the publications and official websites of Central Bank of Nigeria (CBN), National Bureau of Statistics (NBS), IMF's International Financial Statistics (IFS), World Development Indicators (WDIs) and the Worldwide Governance Indicators (WGIs). Data were analysed using Autoregressive Distributed Lag (ARDL) Bounds test to co-integration approach with inferences drawn at 5% level of significance.

The estimable ARDL Bounds testing formulation to co-integration which integrates the short-run dynamics with the long-run without losing any long-run information is specified as follows:

$$\begin{aligned}\Delta \boldsymbol{IFI_t} = {} & \boldsymbol{\beta_0} + \sum_{\mathbf{h=1}}^{\boldsymbol{p}} \boldsymbol{\beta_{1h}} \Delta \boldsymbol{IFI_{t-h}} + \sum_{\boldsymbol{i=0}}^{\boldsymbol{q}} \boldsymbol{\beta_{2i}} \Delta lnRGDPE_{t-i} + \sum_{\boldsymbol{j=0}}^{\boldsymbol{r}} \boldsymbol{\beta_{3j}} \Delta \boldsymbol{HDI_{t-j}} \\ & + \sum_{\boldsymbol{k=0}}^{\boldsymbol{s}} \boldsymbol{\beta_{4k}} \Delta \boldsymbol{TCI_{t-k}} + \sum_{\boldsymbol{l=0}}^{\boldsymbol{T}} \boldsymbol{\beta_{5l}} \Delta (\boldsymbol{HDI} * \boldsymbol{GEFe})_{t-l} + \sum_{\boldsymbol{n=0}}^{\boldsymbol{u}} \boldsymbol{\beta_{6m}} (\Delta \boldsymbol{TCI} * \boldsymbol{GEFe})_{t-m} \\ & + \sum_{\boldsymbol{n=0}}^{\boldsymbol{v}} \boldsymbol{\beta_{7m}} (\Delta \boldsymbol{lnRGDPE} * \boldsymbol{GEFe})_{t-\mathbf{n}} + \boldsymbol{\alpha_1 IFI_{t-1}} + \boldsymbol{\alpha_2 lnRGDPE_{t-1}} \\ & + \boldsymbol{\alpha_3 TCI_{t-1}} + \boldsymbol{\alpha_4} (\boldsymbol{HDI} * \boldsymbol{GEFe})_{t-1} + \boldsymbol{\alpha_5} (\boldsymbol{TCI} * \boldsymbol{GEFe})_{t-1} \\ & + \boldsymbol{\alpha_6} (\boldsymbol{lnRGDPE} * \boldsymbol{GEFe})_{t-1} \\ & + \boldsymbol{\varepsilon_{2t}} \end{aligned} \quad (3)$$

Results and Discussion

A summary of descriptive statistics of the data used in the estimation is presented in Table 4.1 (see Appendix a). The mean of the variables indicate that the variables exhibit remarkable disparity with respect to their sizes. This implies that estimating the model using the data at levels may lead to spurious outcomes. The standard deviation shows that *IFI*, *HDI* and *TCI* significantly depart from the mean, suggesting that some of the series lack mean reversion property and may therefore require differencing to make it stationary. Also, a quick look at skewness and kurtosis in the Table shows that all the variables in the series have normal distribution falling within the threshold of -3 to +3recommended. This is confirmed by the statistics of Jarque-Bera with the P-value greater than 5%.

The results of the pair-wise correlation matrix presented Table 4.2 (see Appendix b) exposes that there exists a relatively positive and strong relationship between our dependent variable (index of financial inclusion- *IFI*) and the measure of inclusive growth measure (*LNRGDPE*); human development index (*HDI*) and preferred development strategy index (*TCI*), recording 0.67; 0.57 and 0.47 respectively. This is relatively low when compared with, for instance, the 0.68 positive correlation recorded by human development indicator (*HDI*) and proxy for inclusive growth (*LNRGDPE*); suggesting the likelihood of having positive impact on financial inclusiveness. Negative correlation coefficients however were observed for all the interacted variables (i.e*HDIGEFe*, *TCIGEFe* and *IFIGEFe*).

Unit Root Tests

The study equally deployed conventional unit root tests such as Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) techniques to test for the presence of unit root in the series. Table 4.3 shows that all the series with the exceptions of index of financial inclusion (*IFI*) and technology choice index (*TCI*), were found to be non-stationary at level with constant and time trends. This shows that the variables *LNRGDPE*, *GEFe*, *HDI*GEFe* and *IFI*GEFe* were stationary at first difference. However, none of the variables is integrated at *I*(2). Therefore, since the data does not contain *I*(2) series, it lend support to the use of ARDL bounds testing approach to co-integration.

Table 4.3: Unit Root Tests (Augumented Dickey Fuller (ADF) and Philips-Perron (PP)

Variables/Tests	***t-statistics***	***Critical Value***	***t-statistics***	***Critical Value***	***Order of Integration***
	Levels		***First Difference***		
ADF Test					
IFI	-3.35988	3.74039	-3.3672	-3.0522	I(1)
LNRGDPE	-2.7966	3.6736	-4.7982**	-3.6908	I(1)
TCI	-5.0377**	-3.8753	-5.8491*	-3.1754	I(0)
HDI	-0. 183993	3.029970	-5.220258	-3.040391	I(1)
TCIGEFe	-2.2221	-3.6908	-4.9752**	-3.7105	I(1)
HDIGEFe	-2.6112	-3.83151	-5.95467*	-3.857386	I(1)
IFIGEFe	-1.6729	-3.6908	-3.8433*	-3.0522	I(1)
PP Test					
IFI	-3.4373	-3.54039	-3.3766	3.2978	I(1)
LNRGDPE	-2.7966	-3.6736	-4.8848**	-3.6908	I(1)
TCI	-1.4678	-4.6679	-2.0946	-1.9628	I(0)
HDI	0.103517	-3.029970	-5.288034	-3.040391	I(1)
TCIGEFe	-2.0175	-3.6908	-4.9752**	-3.7104	I(1)
HDIGEFe	-2.8151	-3.6908	-5.1956**	-3.7105	I(1)
IFIGEFe	-1.6729	-3.6908	-3.9091*	-3.7105	I(1)

Note: The asterisk (*, **,*) denote the rejection of the unit root hypothesis at the1%,5% and 10% significance levels respectively.**

Source: Authors, 2020

Essentially, the null hypothesis for the presence of unit root at levels was rejected for all the variables with the exception of technology choice index (*TCI*) and the indicator of financial inclusion (*IFI*), suggesting that all the series were integrated but after differencing them.

Co-integration Test Result

In order to establish the existence of a long-run equilibrium relationship among the variables, the co-integration test applied in this study was the Autoregressive Distributed Lag (ARDL) Bounds testing to co-integration procedure proposed by Pesaran*et al.,* (2001). This approach has certain

econometric advantages in comparison to other co-integration procedures (Engel & Granger, 1987; Johansen 1988; Johansen &Juselius, 1990). One, the approach is applicable regardless of whether the underlying regressors are stationary at *I*(0) or *I*(1) or a mixture of both. Moreover, unlike most of these traditional co-integration procedures which are valid for large sample, the approach is not only suitable for small sample size study, but it provides unbiased estimates of the long-run model and valid *t*-statistics even when some of the regressors are endogenous (Pesaran*et al.,* (2001). While the lag order of the variables is given in the second column of the Table 4.4 below, the Bounds test results are reported in the lower segment of the same Table. The calculated *F*-statistics (6.6309) in the ARDL regressions was found to exceed the upper Bounds critical values of 3.23, 3.61 and 4.43 for significance levels of 10%, 5% and 1%. This implies that the null hypothesis of no co-integration can be rejected at the three conventional significance levels. In other words, there exists a long-run relationship among the series. Thus, inclusive growth indicator (*RGDPE*), index of financial inclusion (*IFI*), proxy for the country's resource endowment and development strategy (*TCI*) and the interacted variables of both institutional quality (*HDIGEFe*) and human development index and technology choice index (*TCIGEFe*)as well as financial-institutional interacted variable (*IFIGEFe*), are co-integrated or co-moving in Nigeria over the period of 1998 to 2017.

Table 4.4: Results of the Bounds Co-integration Test

Bounds testing to Cointegration			**Diagnostic tests**	
Estimated Models	**Optimal lag length**	***F*-statistics**	**R^2**	**Adj-R^2**
Ifi=f(lnrgdpe,tcigefe, hdigefe,lnrgdpegefe,hdi,tci)	1, 1, 1, 1, 1,1,1	6.6309*	0.945	0.921
Significant Level		**Critical Values**		
		Lower bounds (I(0)	**Upper bounds I(1)**	
1%		**3.15**	**4.43**	
5%		**2.45**	**3.61**	
10%		**2.12**	**3.23**	

Note: *, and *** represent significance at 1, 5 and 10% level respectively.**

Source: Authors' Computation,2020

From the results of the ARDL co-integration test, the null hypothesis of no long-run equilibrating relationship is strongly rejected as the calculated Wald *F*-statistics (5.31610 and 5.11203) in the ARDL regressions were respectively found to exceed the upper Bounds critical values at the three conventional significance levels. The evidence that there exists a long-run relationship among the variables suggests the estimation of the autoregressive distributed lag (ARDL) bounds testing approach to co-integration framework for specifically achieving the stated objective.

Results of Institutional Quality and Finance-led Inclusive Growth using Autoregressive Distributed Lag Model

The result disclosed an evidence to support the literature that indicator of financial inclusion and institutional quality factor are positively related to inclusive growth. This suggests that an improved institutional quality would bring about a rise in real GDP per person employed via broad-based financial inclusiveness in Nigeria. The results of the estimated co-integrated vectors are presented in Table 4.3.This finding also implies that improvement of social infrastructure services such as health and education would generate substantial productive employment capabilities.

Table 4.5: Short Run and Long Run Autoregressive Distributed Lag Models

Short-Run Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNRGDPE)	-2.81572	9.595659	-0.29344	0.7883
D(HDIGEFE)	-9.78829	1.994042	-4.90877	0.0162
D(TCIGEFE)	8.887457	1.699102	5.23068	0.0136
D(IFIGEFE)	-1.01537	0.037064	-27.3951	0.0001
D(HDI)	-11.6254	2.275948	-5.10793	0.0145
D(TCI)	10.44341	2.014266	5.184722	0.0139
ECM(-1)	-1.99125	0.406377	-4.90001	0.0163

Long-Run Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNRGDPE	-3.88275	3.094061	-1.2549	0.2984
HDIGEFE	-4.84652	0.919071	-5.27328	0.0133
TCIGEFE	4.70842	0.789239	5.965772	0.0094
IFIGEFE	-0.93245	0.019767	-47.172	0.0000
HDI	-4.83762	1.010753	-4.78616	0.0173
TCI	5.245003	0.904019	5.801872	0.0102
C	-30.0418	13.78902	-2.17867	0.1175

Source: Authors' Computation, 2020

Thus,

IFI = 30.0 + 3.9LNRGDPE – 4.9HDIGEFE + 4.7TCIGEFE – 0.9IFIGEFE – 4.8HDI + 5.3TCI
(4.1)(0.30) (0.01) (0.01) (0.00) (0.02) (0.01)

From the estimated long-run equation 4.1, all determinants excluding the inclusive growth measure (*RGDPE*) were all significant at the 5 per cent level. It can be inferred that the preferred development strategy (*TCI*) and its interaction with political institutional factor (*TCIGEFe*) had a positive statistically significant effect on financial inclusiveness in Nigeria, indicative of inappropriate adoption of development strategy over the period investigated. On the other hand, the interacted human development-institutional variable (*HDIGEFe*) had a negative statistically significant effect on financial inclusiveness also both in short- and long-run, implying deteriorated socio-economic life of Nigerians over time. Such that a 1.0 per cent improvement in institutional quality could deepen financial inclusiveness by 4.7 per cent. Contrary to expectation however, a 1.0 per cent change in the preferred development strategy index would only dampen the level of financial inclusiveness in Nigeria by 5.3 per cent in the long-run.

One of the major findings which stands out from the analysis was that institutional quality and its interactions with other control variables are predictors of a broad-based financial inclusiveness Indeed, institutional-financial composite index is the most significant of all the variables with the institutional factor reinforcing its positive effect on widespread inclusive

finance. Another fascinating outcome from the study was the inverse relationship between the measure of inclusive growth and the explained variable (*IFI*)) indicator. Surprisingly, however, it was observed that contrary to the a-*p*riori expectation, the structural variable (*TCI*) at level and at the interacted form, was found to be positively and statistically significant, thus revealing the failure of successive Nigerian governments to adopt appropriate development strategy in converting the nation's huge potentialities into realities of transformative development over the years.

It is worthwhile to note that the main difference between this study and that of Easterly and Levine (2002) or Levy and Fukuyann (2010) or Stiglitz (2016) or Ajakaiye and Tella (2016) is that, we use a contextualized and homogenous country-specific sample data to reflect the country's peculiarities in terms of structure of its resource endowments. In addition, however, the results are supportive of the previous studies (Lin, 2009; Lin & Chang, 2014; Siddique, 2016, Mabasa&Mqolomba, 2016) who had earlier explored cross-country regressions, and found that most developing economies characteristically have adopted inappropriate development strategies despite their resources endowments (Comparative Advantage Defying). Although, the results slightly differ from these studies because they failed to test in any detail whether technology choice and the interaction of institutional quality and financial inclusion variables have effects on inclusive growth.

Therefore, in general consonance with the theoretical a-*p*riori expectation, institutional quality was found to be a major determinant of inclusive growth having a positive impact on human capital development as well as formal financial services (availability and usage of banking services) during the period investigated. The dominant plausible explanation for these findings could partly be attributed to the transition to democratic governance since 1998. While the interaction of institutional factors with financial inclusion (*IFIGEFe*) was found to have a strong statistically significant effect on financial inclusiveness, but the interaction of governance variable with human development indicator (*HDIGEFe*) was found to have a negative statistically significant impact on the dependent variable.

Post Estimation Test.

Stability Test

A diagnostic test for parameter stability was conducted and the result is presented in Figure 4.1 and Table 4.6, respectively. All the parameters of the model satisfied the stabilitycondition which further confirms the stationarity properties of the model. Since the autoregressive (AR) process was found to be stable i.e all the five roots of the characteristic AR polynomial have absolute value less than one and lie inside the unit circle, it implies that the impact of shocks in the variables would diminish over time and the parameter estimates would produce stable dynamics for the inclusive growth model.

The study also adopted the techniques of cumulative sum (CUSUM) and cumulative sum of squares proposed by Borenszte*in et al.* (1998) and earlier used by Pesaran and Pesaran (1997), Mohsen *et al* (2002) and Suleman (2005) to test the stability of the long-run co-efficients.The equation parameters are said to be stable if the whole sum of recursive errors lies within the two critical lines. Figures 4.1a and 4.1b show that the parameters of the analysed equation are relatively stable, since the recursive errors lie within the two critical lines of CUSUM and CUSUMSQ tests.

It can be seen from the Figures that the plot of CUSUM and CUSUMSQ stay within the critical 5 per cent bounds to confirm the long-run relationships among the variables and thus shows the stability of coefficients.

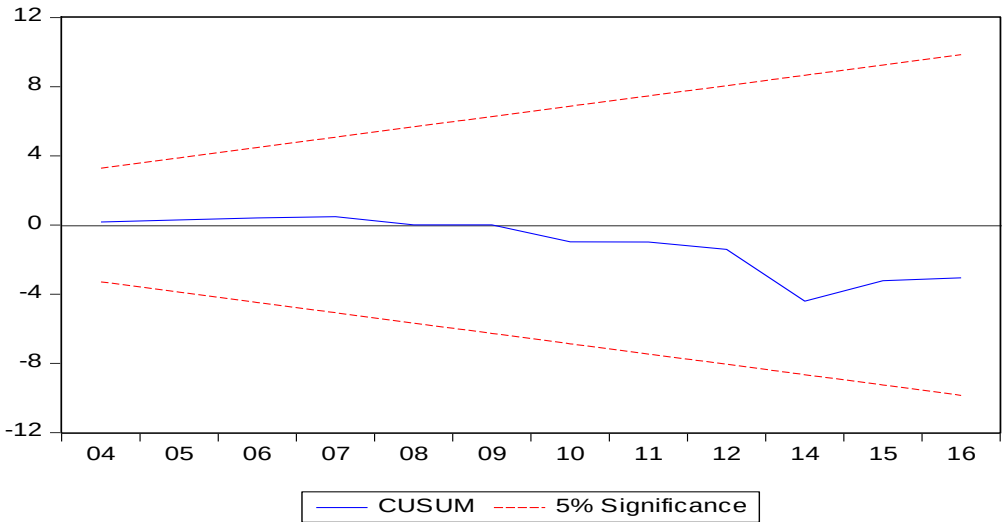


Figure 4. 1a: Cumulative Sum (CUSUM) of Recursive Residual Test

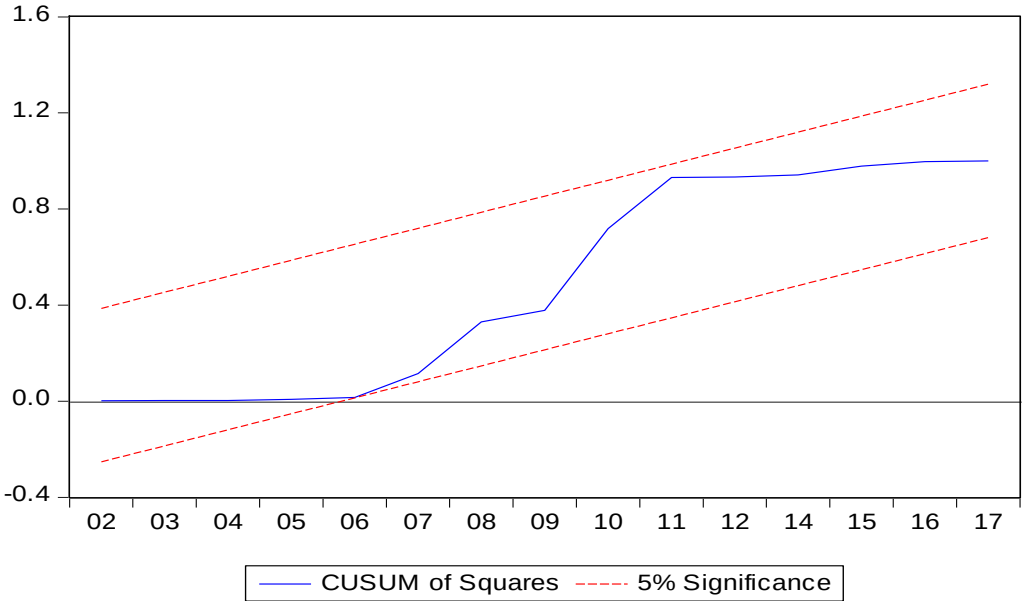


Figure 4.1b: Cumulative Sum of Square (CUSUMSQ) Residual Test

Diagnostic Tests for Residuals

From the results of the diagnostic tests conducted and reported in the appendix B, the Breusch- Godfrey Langrange Multiplier (LM) test for all the augmented VAR models did not reject the null hypothesis which stated that 'there is no

serial correlation'. This indicated that the error terms were not serially correlated at the 95% confidence intervals. Similarly, the results of the heteroscedasticity tests (with no cross terms) did not reject the null hypothesis of 'homoscedasticity'. This implied that the error terms had constant variance, as the disturbances certified the equal variance assumption. Similarly, the Ramsey RESET test did not reject the null hypothesis of 'no misspecification in all the estimated equations, confirming that the error correction models were free of specification errors.

Table 4.6: Diagnostic Tests

Test	*F*-statistic	Probability
X^2 SERIAL	**0.4228**	**0.5338**
X^2 ARCH	**0.4730**	**0.5014**
X^2HARVEY	**1.9249**	**0.1744**
X^2RAMSEY	**0.3128**	**0.6058**
NORMALITY TEST		**0.9450**

Note: *X^2 Serial* is for serial correlation. *X^2 ARCH*isforautorgressive conditional heteroscedasticity. *X^2 WHITE* is for white heteroscedasticity and *X^2 RAMSEY* for Ramsey Reset test.

These results indicated that the short-run models passed all the relevant diagnostic tests, since there could be no suspicion of multicolinearity among the variables when the functional forms of the models were well specified and the disturbances had equal variances. Moreover, the problem of endogeneity was largely unexpected when the error terms were serially uncorrelated, with the regressors being the lagged values.

Summary, Conclusion and Policy Implications

The growing recognition of the linkage between financial inclusion and quality institutions of governance for long-term inclusive growth and development especially in the developing world spurred this paper's analysis of the effect of institutional-led financial inclusion on broad-based productive employment growth. Accordingly, lifting millions of people out of poverty and bridging the gaps of inequality still remain one of the most empowering

idea in the world history. Consequently,examining the institutional-context effects of an inclusive financial system on inclusive growth in Nigeria became imperative. The study therefore considered a time dimension coinciding with both the post-financial liberalization regimes and the preparations towards ushering in of democratic governance. The model estimated by the ARDL Bound testing to co-integration highlights three main results. One, analysis shows that all the explanatory variables were found to exert a positive statistically significant effects on finance-inclusive growth link in Nigeria both in the short-run and the long-run. Two, institutional quality had an overall significant effect on financial inclusion for the period investigated. Three,contrary to a-priori theoretical expectation, technology choice index was positively signed indicative of inappropriate adoption of comparative-advantage defying (CAD) as opposed to comparative-advantage conforming (CAC) development strategy.

The implications of this is that while the effects of the state institution could vary widely in an economy, institutional quality appears to be the dominant driving force behind both the broad-based financial systems and productive employment growth. Our findings from the analysis suggest that radical improvement in the area of building credible institutional capacities beyond the present democratic threshold will be much needed to anchor and coordinate innovative and deepening of financial inclusion policies; leveraging on new technologies such as mobile channels, digital financial services, as well as expanding financial inclusion database, in order to achieve the CBN (2019)'s targeted 95% financial inclusion in 2024. Hence, a policy prescription that emerges from this study is the need for a stronger and better enabling environment for which the financial services providers could effectively address the constraints for increasing both access and usage of financial services in Nigeria. This implies that for a given quality of institution, building inclusively innovative financial systems and implementing of various initiatives in the NFIS would stimulate economic growth, jobs creation and poverty reduction at the macro level, resulting in further deepening financial inclusion of a broader segment of the society which ultimately would improve living standards of the citizenry.

However, the desired improvement in institutional quality may unlikely result in an automatic broad-based productive employment growth without the vital

component of an inclusive financial sector, real sector's effectiveness in credit evaluation, public sector surveillance, stringent accounting standards and auditing practices, as well as a sound legal and regulatory frameworks; all which are the essentials of the state institutional leadership to guarantee sustainable inclusive growth and development. Accordingly, therefore, in order to achieve a longer term inclusive growth which can only be viewed as depending on inclusive digital financial services, such as Mobile Money and Digital Financial Services (DFS); technical efficiency, and strong institutional governance, both the private and public must double their efforts to reduce further financial exclusion rate to 20% and 5% by 2020 and 2024 respectively.

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APPENDIX

Appendix a

Table 4.1: Descriptive Statistics of the Variables

	IFI	LNRGDPE	HDIGEFE	IFIGEFE	TCIGEFE	HDI	TCI
Mean	37.02400	-0.12	-54.60	-41.78	-64.49	48.76500	57.70500
Median	44.51000	-0.18	-54.86	-50.30	-63.74	48.15000	56.45000
Maximum	92.93000	0.297880	-46.40	0.000000	-52.70	53.20000	74.70000
Minimum	0.000000	-0.50	-61.83	-108.73	-85.16	44.30000	46.50000
Std. Dev.	24.87975	0.280633	4.201612	27.82212	8.536942	2.715506	7.778613
Skewness	0.269095	0.124973	0.488625	-0.32	-0.68	0.389551	0.408909
Kurtosis	2.721579	1.513366	2.467842	3.041582	2.924634	1.882445	2.247396
Jarque-Bera	0.305972	1.893794	1.031839	0.348678	1.549290	1.546609	1.029364
Probability	0.858142	0.387943	0.596951	0.840012	0.460867	0.461486	0.597691
Sum	740.4800	-2.37	-1,092.07	-835.51	-1,289.82	975.3000	1154.100
Sum Sq. Dev.	11761.03	1.496345	335.4173	14707.33	1384.708	140.1055	1149.630
Observations	20	20	20	20	20	20	20

Authors' calculation from E-views

Appendix b

Table 4.2: Pair-wise Correlation Matrix

Covariance Analysis: Ordinary

Date: 10/26/20 Time: 11:10

Sample: 1998 2017

Included observations: 20

Correlation	IFI	LNRGDPE	HDIGEFE	TCIGEFE	IFIGEFE	HDI	TCI
IFI	1.00						
LNRGDPE	0.67	1.00					
HDIGEFE	-0.54	-0.67	1.00				
TCIGEFE	-0.55	-0.36	0.42	1.00			
IFIGEFE	-1.00	-0.65	0.47	0.55	1.00		
HDI	0.57	0.68	-0.55	-0.38	-0.53	1.00	
TCI	0.47	0.35	-0.08	-0.89	-0.43	0.46	1.00

Authors' calculation from E-views

ECONOMIC GLOBALISATION AND THE MANUFACTURING OUTPUT IN NIGERIA

[1]WOSU, CHIDI&[2]ABRAHAM, ANTHONY
[1]Department of Economics, Ignatius Ajuru University of Education, Port Harcourt
[2]Department of Economics and Development Studies, Federal University Otuoke

Abstract

The study investigates the impact of economic globalisation on the manufacturing output of Nigeria, using annual time series data from 1980-2019.The explanatory variables include;foreign direct investment, foreign portfolio investment, official development assistance, trade openness, and exchange rate while manufacturing output is the dependent variable. The Augmented Dickey-Fuller Unit root was conducted to test for the stationarity of the variables while the Engel-Granger two step Co-integrationtest was conducted to determine whether a long run relationship exists between the variables. The unit root test reveals that all the variables became stationary after first difference, while the Engel-Granger co-integration test reveals that a long run relationship exists between the variables. The results from the analysis show that foreign direct investment, foreign portfolio investment and official development assistance all have positive and significant impact on manufacturing output in Nigeria.. Conversely, trade openness and exchange rate have negative impacts on manufacturing output in Nigeria. The study therefore concludes that economic globalisation has a positive impact on manufacturing output in Nigeria. It is recommended among others that economic globalization should be embraced and that the Nigeria government should put adequate measures in place to attract foreign direct investment and foreign portfolio investment.

Keywords*: Economic Globalisation, Foreign Direct Investment, Official Development Assistance.*

Introduction

The idea of globalisation has received considerable attention from scholars in recent times. Nevertheless, the term globalisation does not have a fixed description (Ebong, Udoh, and Obafemi, 2014). Globalisation can be viewed as a comprehensive set of procedures concerning multiple networks of economic, political and cultural interchange propelled by information and communication technology (Ojo and Ololade 2014;Anjande and Ijirshar, 2017; Kalu, Paul, Chukwu, KanuOgbuagu, Osunkwo and Ndubuisi, 2019).Economic globalisation encompasses the snowballing of economic integration and interdependence of national, regional and local economies across the world through the strengthening of cross-border movements of goods, services, technologies and capital (Ogunyomi, Jenrola, and Daisi, 2013). This implies the globalisation of production, finance, markets, technology, organizational regimes, institutions, corporations, and labour (Akpan, Inimfon, Daniel and Udoka, 2013; Felix and Emmanuel 2015; Asuamah, Samuel and Abbey, 2016). Ever since, this has been on the rise in terms of the emergence of trans-national trade amongst the countries of the world. Vaz and Baer (2014) observed that the dilemmas emerging states face is whether they should open their economies up to the globalisation processes or risk the possibility of linking other countries. We are mostly concerned with how globalisation impacts on the manufacturing sector in Nigeria **(**Ajakaiye, Jerome, and Alaba, 2016).

On the strength of the above, the manufacturing sector plays a very catalytic and crucial role and possesses many dynamic paybacks for transforming the economy. Manufacturing encompasses the process of transforming raw materials into finished or in-between goods (Akinmulegun and Oluwole, 2014; Ajakaiye, Jerome, and Alaba, 2016).Through the manufacturing sector, the nation can determine the level of economic efficiency and functionality of the entire economy (Danladi, Akomolafe, Babalola and Oladipupo (2015). It is strongly believed in some quarters that the development of the manufacturing sector connotes the development of the economy entirely since it is a sine-qua-non for improving the vicious cycle of poverty and for achieving dynamic and self-reliant economies **(**Akpan and Atan, 2015; Ali, Victor, Obayori, and Obayori, 2018). Additionally, it generates investment capital at a faster rate

than any other sector of the economy while promoting wider and more effective linkages among different sectors (Usenobong and Johnson, 2015).

In light of the above, this study investigates the impact of economic globalization on manufacturing output in Nigeria. In order to achieve this, the study investigates the impacts of foreign portfolio investment, foreign direct investment, official development assistance, exchange rate and degree of openness on manufacturing output in Nigeria.

Literature Review

Theoretical Literature

Though there are several theories on the connections between globalisation and the manufacturing sector in Nigeria, few theories relevant to our study are briefly discussed here.

(a) The Two- Gap Model of Development

The two-gap technique is championed by Chenery and Strout (1956) with the idea that critical gap exists in the economy. These are the investment-savings gap and the foreign aid gap. The two-gaps are separate and impose independent constraints on the achievement of the growth targets in much less advanced counties (LAC). To fill the savings gap, external aid is needed to meet the home needs of national income. Correspondingly, the theory has fixed nexus assumed between target foreign exchange requirement and net export income. In this situation, if the net export income at any time falls short of the foreign exchange earnings, a foreign exchange gap is sure to occur and can be stuffed up by means of external aid. The two-gap approach can be explained in terms of the national income identities like E–Y = I-S = M-X = E-F. E is national expenditure, Y is national income and output, I = investment, S = savings, M represents import, X = export, and F represents net capital influx. On this analysis, I-S represents domestic savings gap while M-X is the foreign exchange gap. In every economy, savings gap can arise when domestic savings rate fall short of the investment required to accomplishing the target. In Nigeria, the ability to mobilize savings considered vital and enough to achieved desired goal in the manufacturing sector remain too utopian a task on the part of the government. Savings – investment gap

therefore, exist only to the point where domestic savings becomes too small to the magnitude necessary to obtain the needed rate of growth.

(b) Portfolio Theory of International Capital Flows

Devereux and Saito (2006), offered a biddable model of global capital flows in which the presence of nominal bonds and the portfolio structure of net foreign assets is a necessary element in expediting capital flows between countries. National monetary policies make domestic and foreign currency denominated bonds vary in the gradation to which they can hedge country specific consumption risk. This leads countries to have different composition of currency-denominated bonds in their countrywide portfolios. By altering their gross positions in each currency's bonds, countries can accomplish an optimally hedged variation in their net foreign assets (or their current account), hence expediting global capital flows. Moreover, the risk characteristics of optimal portfolios ensures that current account movements are sustainable -net debtor countries pay lower rates of return on their gross liabilities than they receive on their gross assets. This ensures that the distribution of wealth across countries is stationary.

Empirical literature

This section entails the empirical literature on the affiliation between globalization and its impact on the manufacturing sector.

Aras and Odebode(2019).examined the impact of globalization on manufacturing output in Nigeria. Using structural vector autoregressive (SVAR) approaches, from 2010Q1 to 2018Q4, the findings revealed that manufacturing output and transportation responded significantly to the foreign shocks emanating from globalization. The study established that the manufacturing output reacted negatively to exchange rate fluctuations, implying that exchange rate is very important to manufacturing sector in Nigeria.

Ali, Victor, Obayori, &Obayori (2018) studied the effect of globalization on manufacturing sector growth in Nigeria. Specifically,the study examined how trade intensity index, portfolio investments and trade restrictions impact on the growth of the manufacturing sector in Nigeria for the period from 1980 to

2016. In analysing the data, the study empolyed Phillips-Perron unit root test, Johansen co-integration and parsimonious error correction model (ECM). The results of the unit root test indicated that all the variables were stationary at first difference. The Johansen co-integration test results disclosed that the variables are co-integrated. The error correction model result showed that manufacturing sector growth lagged for one period is positively related to current growth of the manufacturing sector. Also, trade intensity index has significant positive impact on manufacturing sector growth. Thus, a percentage increase in trade intensity index induces 0.145 per cent increase in manufacturing sector growth. On the other hand, trade restrictions exerted significant negative impact on manufacturing sector growth. Thus, one per cent increase in trade restrictions in the form of tariffs, decreases manufacturing sector growth by 0.004 per cent. Again, portfolio investment exerted a negative and insignificant impact on manufacturing sector growth. The ECM (-0.0229) revealed that convergence of the model is possible at a speed of 2.29 per cent. Similarly, Anjandeand Ushahemba (2017) x-rayed the relationship between globalization and the manufacturing sector performance in Nigeria from 1985 to 2015. The study adopted ARDL technique in data analysis. The study revealed that some ofthe variables were stationary at level while others were stationary at first difference. The co-integrationresults showed a long-run relationship between globalization and manufacturing output in Nigeria. Conversely, the short-run impact of the globalization on the manufacturing performance was negative. The study also found that even if manufacturing output drift away from equilibrium in the short-run, it has the capacity to return to long-run equilibrium at 66.47% each year.

Asuamah, Samuel and Samuel (2016) investigated the relationship between globalisation and manufacturing sector productivity in Ghana for the period 1961-2013 using annual time series data. The augmented Dickey Fuller and Kwiatkowski–Phillips–Schmidt–Shin, Johansen co-integration test,VECM and the granger causality tests were employed. The findings suggest that all the variables were integrated of order one. The findings of the study indicate that the manufacturing sector has not benefited from globalisation.

Agu, Nnaemeka and Maduagu (2016) examined the effect of globalization on Nigeria manufacturing sector. Specifically, the objectives of the study are to evaluate the influence of trade liberalization on the consumption of Nigeria

made products, determine the effect of technology on product quality in the Nigerian manufacturing industry, and determine the influence of globalization on employee job relations in the Nigerian manufacturing industry. The study had a population size of 640, out of which a sample size of 246was realized using Taro Yamane Formula at 5% error to tolerance and 95% level of confidence. The instrument used for data collection was principally questionnaire and interview. The findings show that trade liberalization has significant negative effect on the consumption of Nigeria made products, technology has a positive influence on product quality of the Nigeria manufacturing industry and globalization has significant positive influence on employee job relations in the manufacturing industry. The study recognized that globalization is a weapon of double edge that boosts and reduce economic activities of any developing nation.

Danladi, Akomolafe, Babalola and Oladipupo (2015) investigated the influence of globalization on the manufacturing sector of Nigeria from the period 1980 to 2013. The degree of openness, foreign direct investment, exchange rate and inflation rate were used to capture the causal affiliation between globalization and the manufacturing sector of Nigeria. The study adopted Vector Auto-Regression (VAR) model in data analysis and the results shows a positive relationship between globalization and the manufacturing output. This means that globalization increases the general production level. This shows that a positive relationship exists between globalization and the manufacturing sector of Nigeria.

From the studies reviewed, conflicting results have been observed (Anjande and Ushahemba, 2017, Asuamah et al, 2016 and Danladi et al 2015). This serves as a motivation for this study.

Method of Study

In an effort to find the impact ofglobalisation on the Nigerian manufacturing sector, the study embraces the regression model. The study employed time series data covering from 1980 to 2019. In data analysis, the study employed the ordinary least square technique (OLS). However, due to the nature of the time series, the OLS was preceededa dianogstic test such as unit root test using Augumented Dickey Fuller unit root test. This test is to ascertain the

stationarity of the variables. Based on the result of the Augumented Dickey Fuller test, the test for co-integration was carried out. This is to ascertain the existence of long-run relationship between the variables and this is followed by the error correction mechanism.

Model Specification

The model for this study is premised on the study by Ali, Victor, Obayori and Obayori (2018) but with little modification. The areas of modification are on the variables and time frame. As a measure of economic globalization Ali et al (2018) used trade intensity index, trade restrictions and foreign portfolio investment while this study used trade openness, foreign direct investment, foreign portfolio investment and official development assistance. Also, Ali et al (2018) stopped their analysis at 2018 while this study extended to 2019.
The data for this study are gotten from CBN statistical bulletin various edition, IMF international financial statistics and World Development indicators.

The modified model is stated below:

$$MOT = f(FDI, PFI, ODA, TOP, \text{EXR}) \quad \textbf{(1)}$$

Explicitly equation (1) can be stated in econometric form thus

$$MOT = \lambda_0 + \lambda_1 FDI_t + \lambda_2 PFI_t + \lambda_3 TOP_t + \lambda_4 ODA_t + \lambda_5 EXR_t + \mu_t \quad \textbf{(2)}$$

Where:

MOT = Manufacturing Output,
FDI = Foreign Direct Investment,
PFI = Foreign Portfolio Investment,
TOP = Trade Openness,
ODA = Official Development Assistance,
EXR = Exchange Rate.
λ_0 = Constant
$\lambda_1, \lambda_2, \lambda_3 and \lambda_4 > 0; \lambda_5 < 0$ = Coefficients of the Explanatory Variables
μ_t = Error term

Manufacturing output is the dependent variable, while foreign direct investment, foreign portfolio investment, trade openness, official development assistance and exchange rate the explanatory variables.

Results and Discussion

Unit Root Test

The unit root test was conducted on the variables in order to avoid spurious regression. We employed the Augmented Dickey-Fuller unit root test in order to determine the level of stationarity of the variables, that is, whether the variables are stationary at levels or at first difference.

Table 1: Unit Root Test Results

Augmented Dickey-Fuller (ADF) Test

Variables	**Level**	**5%C.V**	**1st Diff.**	**5%C.V**	**Status**
LOG(MOT)	-0.532939	-3.529758	-5.116184	-3.533083	I(1)
LOG(FDI)	-2.996750	-3.529758	-9.420624	-3.533083	I(1)
LOG(FPI)	-3.349035	-3.529758	-7.214563	-3.533083	I(1)
LOG(TOP)	-2.170117	-3.529758	-6.362765	-3.533083	I(1)
LOG(ODA)	-3.531388	-3.529758	-5.845622	-3.533083	I(1)
LOG(EXR)	-0.845500	-3.529758	-5.723736	-3.533083	I(1)
ECM	-7.323855	-3.529758	-	-3.533083	I(1)

Source: *Authors Computation*

The result of the unit root test using the ADF at constant and trend as reported in Table 1 shows that MOT, FDI, FPI, TOP, ODA and EXR were stationary after 1st difference. Since the error is stationary at level, it revealed that there is a long-run relationship between the dependent and the explanatory variables.

Engel-Granger Co-integration Test

We use the Engel-Granger two step approach to test if there exist at least a linear combination of the variables with unit roots that is stationary at first difference. The result is presented below:

Table 2: Engel-Granger Co-integration Test

Dependent	tau-statistic	Prob.*	z-statistic	Prob.*
MOT	-14.02953	0.0000	93.38561	0.9999
FDI	-5.039717	0.1161	-61.78210	0.0000
FPI	-6.337844	0.0103	-84.69433	0.0000
TOP	-3.243014	0.7820	-16.42639	0.8091
ODA	-4.980141	0.1276	-52.31907	0.0000
EXR	-3.246189	0.7809	-15.81106	0.8358

MacKinnon (1996) p-values

The result above reveals that there exists a long run relationship between the dependent and the explanatory variables.

Parsimonious Error Correction Model

The table presents the estimated coefficients of the long run relationship between the variables in the model

Table 3: Estimated Coefficient of the Relationship between the variables

Dependent Variable: DLOG (MOT)

Variable	Coefficient	Std. Error	t-Statistic	Prob.* C
	-0.305702	0.120330	-2.540526	0.0200
DLOG(MOT(-1))	2.767529	1.015801	2.724479	0.0135
DLOG(MOT(-3))	2.344578	0.932726	2.513683	0.0211
DLOG(FDI)	0.331418	0.139824	2.370250	0.0285
DLOG(FDI(-1))	-1.466087	0.322021	-4.552770	0.0002
DLOG(FDI(-2))	-0.331359	0.240130	-1.379916	0.1836
DLOG(FPI)	0.115925	0.051042	2.271184	0.0350
DLOG(FPI(-1))	-0.125589	0.060194	-2.086403	0.0507
DLOG(FPI(-3))	-0.075411	0.052505	-1.436272	0.1672
DLOG(TOP)	-1.524794	0.388039	-3.929486	0.0009
DLOG(TOP(-3))	0.720189	0.338556	2.127238	0.0467
DLOG(ODA)	0.472905	0.155975	3.031937	0.0069
DLOG(ODA-2))	0.359985	0.163627	2.200037	0.0404
DLOG(EXR)	-0.338579	0.261031	-1.297084	0.2101
DLOG(EXR(-1))	1.047209	0.332235	3.152012	0.0052
DLOG(EXR(-3))	0.628853	0.346365	1.815578	0.0853
ECM(-1)	-3.857085	0.608110	-6.342746	0.0000

R-Square = 0.837175, F-Statistics = 6.1056, Prob(F-Statistic) = 0.000160, D-W = 1.5347

Results and Discussion

The coefficient of determination (R2) of the estimated model indicates that about 84% of the variations in manufacturing output is explained by the combined effect of the explanatory variables (FDI, FPI, TOP, ODA and EXR), while the F-Statistics shows that overall regression is significant at both 1% and 5% levels of significance. Also, the equations standard error of 0.760254 signifies that in about two-thirds of the time, the predicted value of domestic manufacturing output (MOT) would be within 7.6% of the actual value and given the Durbin-Watson value of 1.5347 which suggests the absence of serial or auto-correlation.

The coefficient of the error correction term is statistically significant and carries the expected negative sign at both 5% and 1% levels of significance. However, the speed of adjustment is very high, that is, 386% of the adjustment to equilibrium in manufacturing output is expected to occur in the long run. Further, this figure shows the average speed of adjustment of manufacturing output to its long run change in the equilibrium condition. This result indicates that ignoring error correction in non stationary time series analysis would lead to misspecification of the underlying process to achieve manufacturing output stability in Nigeria.

As shown in table 3, the current value of foreign direct investment has a positive and significant impact on manufacturing output in Nigeria. A percent increase in FDI improves manufacturing output by 33%. But the first lagged value has a statistically negative influence on the volatility of manufacturing output over time with an inertia of 147%. This means an increase in the current value of foreign direct investment (FDI) in Nigeria will have a positive effect on manufacturing output in the country which conforms to theoretical expectation.

The value of foreign portfolio investment (FPI) has positive and statistically significant impact on manufacturing output in Nigeria at the 5% level of significance. That is, if there is an increase in portfolio investment by 1 unit, manufacturing output (MOT) would increase by 0.115925 units. This is consonance with our theoretical expectation. However, the first and second

lagged values of FPI have statistically significant negative impact on manufacturing output at the 5% level of significance.

Furthermore, the value trade openness (TOP) has a negative and statistically significant influence on manufacturing output at the 5% level of significance. This is contrary to theoretical expectation. However, the third lag of trade openness (TOP) has a positive and statistically significant impact on manufacturing output (MOT) which agrees with theoretical expectation.

Official Development Assistance (ODA) on both current and second values have a positive and significant impact on manufacturing output in the Nigerian economy by 47% and 35% respectively at the 5% level of significance.

Finally, the current value of exchange rate (EXR) has a negative but statistically insignificant impact on manufacturing output at the 5% level of significance. A 1 percent increase in exchange rate would reduce manufacturing output insignificantly by 33 percent.

Conclusion and Recommendations

Evidence from the estimated regression analysis suggests that the explanatory variables explain 84 percent of the variations in manufacturing output in Nigeria. This implies that the estimated model is very reliable for forecast purpose. The result also shows that foreign direct investment, foreign portfolio investment and official development assistance all have positive and statistically significant impact on manufacturing output in Nigeria, while trade openness has negative significant impact on manufacturing output, and exchange rate has a negative but statistically insignificant impact on manufacturing output in Nigeria. The study therefore concludes that economic globalisation has a positive and statistically significant impact on manufacturing output in Nigeria.

This study therefore makes the following recommendations:

1. Economic globalization should be embraced by the Nigeria government and the Nigerian economy at large.

2. Government should endeavour to provide a stable and peaceful economy so as to attract more foreign direct investment to the country.

3. The Nigeria capital market should be properly developed and upgraded in other to enable it attract more foreign portfolio investment since portfolio investment impacts positive and significantly on manufacturing output in Nigeria.

4. There should also be improvement or an increase in official development assistance as it also serves as a driving force that brings about positive impact on Nigeria's manufacturing output.

5. The monetary officials should manage the exchange rate very well to ensure a reduction in it as high exchange rate impacts negatively on Nigeria's manufacturing output.

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ANALYSIS OF PEDESTRIANS' UTILISATION OF FOOT-BRIDGE IN THE NIGER DELTA REGION, NIGERIA

[1]DAMINABO, SARAH I & [2]OSI S. AKPOGHOMEH
[1]Centre for Logistics and Transport Studies,
University of PortHarcourt
[2]Department of Geography and Environmental Management,
University of Port Harcourt

Abstract

The poor use of pedestrian footbridges in the Niger Delta region of Nigeria is alarming. Many opt for the danger of dashing across busy roads despite the presence of bridges nearby. The aim of this study was to analyze level of foot-bridge usage in the Niger Delta Region. The observatory field survey was used as instrument to gather data for this study. The data were analysed using the Statistical Package for Social Sciences (SPSS) version 20. The chi-square test was used to test the hypothesis on the level of foot-bridge usage. The study revealed that the level of foot-bridge usage is low in the region. Hence,the study recommends among others, to construct barricades such as wire mesh fencing and high medians around pedestrian bridges to prevent pedestrians from running across the highways. This will assist in improving the utilization levels of the foot-bridges.

Keywords: *Compliance, Foot-bridge Usage, Pedestrians*

Introduction

Transport remains one of the vital human activities worldwide. It is a crucial and non-replaceable section of the economy, playing critical roles in spatial relations between several locations (Akpoghomeh, 2012).

Major Roads in the Niger Delta and those of other cities across Nigeria are mainly dominated by a host of users and vehicles, the pedestrians being included. It is generally known that the varying transport system is important and valuable to meeting the rising mobility needs while at the same time posing a challenge to walking and cycling (www.fiafoundation.org).Survey by Rites (2008) indicates that about one third of all trips in most cities are by walking. In spite of this fact, most of the urban transport planning models generally ignored such a significant volume of urban travel. The road improvement / development projects do not comprehensively address these issues. Lack of knowledge, concern and sensitivity towards the pedestrians has led to a situation whereby priorities are given to motor vehicles, enhancing the congestion energy pollution and accident on our roads.

Statement of the Problem

Pedestrians are involved in 13% of vehicle-related fatalities (National Highway Traffic Safety Administration (NHTSA, 2018).In response to the high rate of loss of lives and properties along major highways, foot-bridges were introduced on roads, yet compliance to the use of these foot-bridges has been low especially in developing countries.

The various state Governors in the Niger Delta region of Nigeria are spending huge amount to construct pedestrian foot-bridges and is expected that road users will utilize it in order to safeguard lives and ease the flow of vehicular traffic. However, pedestrian foot-bridges are ignored by pedestrians when crossing the road, therefore making the purpose of providing the foot-bridges not achievable.This is not encouraging to the authorities that provided them. Hence, there is need to examine the level of foot-bridge usage in the Niger Delta region of Nigeria.

Literature Review

Conceptual Review

Foot-bridge Usage

Foot-bridges are known by several other names which include pedestrian overpass, foot over bridge, pedestrian bridge and pedestrian overcrossing. They are bridges designed strictly for pedestrians.

Pedestrian refers to persons either walking or running on foot, while in applicable conditions, those who use skateboards, roller skates and similar devices are likewise referred to as pedestrians. In recent times, the term (Pedestrians) majorly refers to a person commuting on a road or footpath, although that was not the applicable term in the past (Rao, 2013).

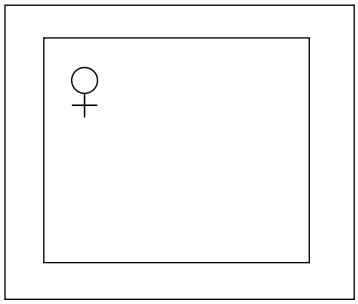
Ogundare(2020)in his report on the use of pedestrian bridges in Lagos on the 1st Feb 2020 stated that only a fraction of Lagos residents sees footbridges as a life-saving facility. He went ahead to report that in Lagos, pedestrians are forbidden to cross the highways where there are foot-bridges. Unfortunately, these rules are not completely obeyed by pedestrians as they are seen most times making a dash across the highway which is usually full of all manner of vehicles, tricycles and motorbikes, most of them being faulty, rather than taking time to walk the few meters of climbing the pedestrian footbridges, though some of them believe that the foot-bridges are far from the bus stops.Others said the bridges are just too high and that they have phobia for height, while some were of the opinion that the footbridges were not user friendly, claiming that the foot-bridges are not properly illuminated at night pointing out that the presence of beggars, mentally deranged people, hawkers and hoodlums is a major repelling factor for them.

Levels of Service for Pedestrians

The flow of pedestrians can also be defined according to the level of service on walk ways in the categories represented in samples A-F below.

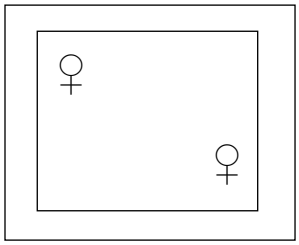
Level A

Pedestrian walks on the desired path without any restrictions by other pedestrians. Pedestrians walking speeds are freely selected. There is no conflict between pedestrians.



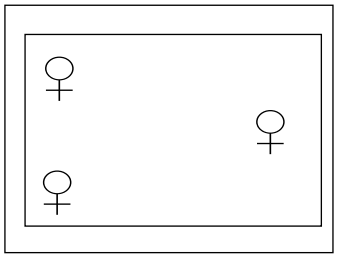
Level B

Level B: pedestrian can select desired walking speeds. There is no crossing or passing conflicts. There are other passengers but no interference between them, and walking paths can be selected freely.



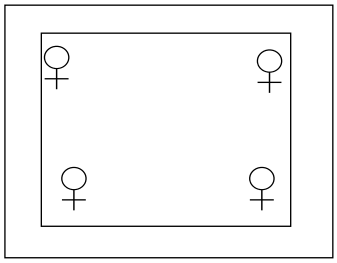
Level C

Level C: Normal walking speed can be achieved. There are other pedestrians but passing them does not involve any conflict. Walking speeds starts lowering and crossing movements may involve conflicts.



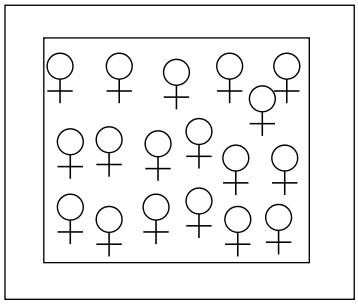
Level D

Level D: Though speed may be normal, passing other pedestrians may be restricted. Friction and interaction between pedestrians may occur. Pedestrians may require to change speed frequently.



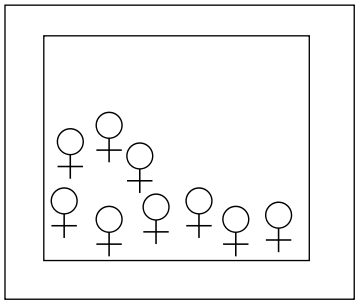
Level E

Level E: The normal speed is restricted. Pedestrian may have to slow down frequently. Passing is not easy due to speed restriction. Crossing or moving in opposite direction is not easy, it reduces the capacity of the walk way.



Level F

Level F: Walking is severely restricted and speed is very slow. There is conflict with other pedestrians crossing and reverse movements are almost impossible. Queues may be formed. Generally, the flow is unstable.



Emperical Review

Ritzati*et al.,* (2013)conducted a research study to assess the rate of utilization of pedestrian bridges in Kuala Lumpur, Malaysia. The study gathered secondary information from pedestrian users and also by observing pedestrian in 16 different study sites. Hence, the study concluded that the rate of utilization is fairly the same in residential homes and in business districts. Factors observed to significantly affect the usage of the bridges include directional flow, presence of median, installation of fences, distance and the volume of vehicle. The most important factors observed to affect the decision of pedestrian to use the bridge is the distance from interested places and the need to save time. Majority of the respondents opted for signalized crossing as the most favourable type of crossing.

Soltani and Mozayeni (2013)in another study conducted in Iran to evaluate the factors on the perceived risk of these pedestrians when crossing the street. This study randomly selected ten footbridges found in both cities of Tehran and Shiraz, while a structured questionnaire was distributed to 200 randomly selected pedestrians. The analysis of the results indicated that there was significant relationship between the percentage of the footbridge users and the average speed of the vehicle. The study concluded that the decision to use the foot-bridge or not is a habit rather than a coincident. The safety of the bridge was the main determinant factor to the usage of the bridge. The results also indicated that adults and the aged hardly use the bridge because of the effort needed to ascend the stairs most especially when they have of luggage. The study suggested that escalators and high barriers if installed will increase the usage of the foot-bridge.

Umah, Samir, Abba, Abdulwarith and Farouk (2019)in their study on Pedestrian's Utilizations of Footbridge in Kano-Nigeria revealed that Pedestrian crossing facilities such as crosswalk, pedestrian foot-bridges overpass, and under-pass at intersection or midblock with crossing facilities are designed to separate pedestrians from the moving vehicles hence improving safety of the pedestrians. Questionnaire survey was used to determine the factors influencing the use and utilization of foot-bridge by pedestrians in Kano city, Nigeria. The survey results show that 70% of the respondents were frequent users of the bridge while 30% were found not be

using it. Analysis of the survey result shows that age and gender were statistically significant in the utilization of the bridge with a p-value of 0.041 and 0.002 respectively while education level was found to be statistically insignificant p-value = 0.688. The major reasons influencing pedestrian to use the bridge were safety (66%), barricades (25%), then traffic flow (9%). For the pedestrians that do not use the bridge, they describe the bridge height (38.5%) as the major reason for not using the bridge followed by poor design of the ramps (26.5%). Improving the design of the bridges and using escalators will surely enhance use of the foot-bridges by the pedestrians in Kano city.

In conclusion, there is unending interest among scholars on the level of pedestrian foot-bridge usage. Moreover, the findings have not been consistent, hence the relevance of this study.

Theoretical Framework

Creswell (2012) describes a theory as an open clarification for perceptions, variables, hypothesis, etc. Theories are, therefore, the perspectives through which a researcher carries out his/her research. For this study, the following theories were considered.

Normative Pedestrian Behaviour Theory

This theory describes pedestrian behaviour, by considering the unifying concept of generalized (dis-) utility of walking and performing activities. The main behavioural assumption is that all actions of the pedestrian, be it performing an activity, walking along a certain route, or bypassing a slower pedestrian, that are performed within the infrastructure facility will somehow provide utility (or equivalently, induce cost), which the pedestrian aims to optimize.Such normativechoice theories will not fully cover real-life human choice behavior (Navin, & Wheeler, 1969) while many experiments show that man violates principles of normative choice. Nevertheless, normative theory does provide a convenient and applicable framework for modeling human decision making, and has been applied successfully in modeling human decision processes in general, and specifically in modeling travel behavior (Ben-Akfva, &Lerman, 1985) Therefore, the rational behavior of a pedestrian *{homo economicus)* will be the main assumption in our pedestrian behavior theory. As seen in the fig below:

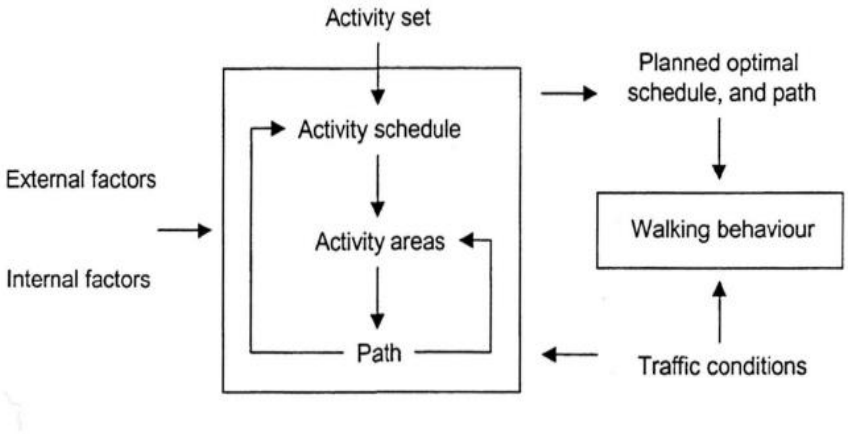


Fig 2: Framework of pedestrian behavior

Utility Theory

Utility theory suggests that individuals will choose to consume or select a preferred alternative which provides them with maximum utility such as satisfaction, cost-saving, etc. This theory can be applied to the pedestrian's road crossing decision. A pedestrian will choose to cross the road by taking various factors into their account such as convenience, safety and security. The utility equation can be expressed as shown in the equation below;

$$U_{in} = V_{in} + \varepsilon_{in} \quad (1)$$

Where U_{in} is utility or satisfaction of an individual n choosing alternative i;

$V_{in}$is observable utility for an individual n choosing alternative i;

ε_{in} is random utility reflecting the "taste" for an individual n choosing alternative i.

Part of utility that an n person recognizes and sees $V_{in}$is mostly defined as a function in

$$V_{in} = \beta_0 + \beta_1 X_{in}1 + \beta_2 X_{in}2 + \ldots\ldots\ldots + \beta_n X_{ink} \quad (2)$$

Where are X_1, X_2,.....,X_k variables associated with utility alternative of i of an individual n; β_0, β_1, β_2....., β_n are model parameters.

Methodology

Research Design

The observational research survey design was adopted for this study. This research design was adopted as it gives direct access through frequency counts on the number of pedestrians who used the foot-bridge.

Sampling Technique

The observational sampling method was adopted for this study. The road users were observed as they crossed the road using frequency counts at each foot-bridge loation. The road users include those who used and did not use the foot-bridge.This method was adoptedto elicit firsthand information about the level of pedestrian foot-bridgeusage.Consequently, a total of 1563 road users were observed as they crossed the road. The distribution of the number of road users / foot-bridges observed was done on the basis of the number of foot-bridges in each of the states.

Study Area

The research study area is the Niger Delta region of Nigeria. The Niger Delta region consists of nine (9) states and they are Abia, AkwaIbom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo and Rivers. However, the study focuses on six (6) out of the nine (9) states. The states include AkwaIbom, Bayelsa, Cross River, Delta, Edo and Rivers. Consequently, the choice of the states was informed by the need to analyse the level of pedestrian foot-bridge usage in the states historically connected traditions and lifestyles. The traditional occupation of people in this area is predominantly fishing and farming.

Participants

The population for this study consisted of pedestrians in the capital cities of the Niger Delta region of Nigeria. The pedestrians comprised of school children (primary and secondary school children), the aged (Elderly road

users), the hawkers (those that hawk things along traffic and major roads were pedestrian footbridges are located), young adults, and wheel barrow peddlers.

Table 1: Population Projection of the Niger Delta States/capitals

State	Capital	2013	2014	2015	2016
AkwaIbom	Uyo	4,785,078	4,950,568	5,121,781	5,482,117
Bayelsa	Yenagoa	2,088,154	2,149,597	2,212,849	2,277,961
Cross River	Calabar	3,544,120	3,648,404	3,755,757	3,866,269
Delta	Asaba	5,144,961	5,312,262	5,485,004	5,663,362
Edo	Benin	3,906,039	4,012,938	4,122,764	4,235,595
Rivers	Port Harcourt	6,595,659	6,823,767	7,059,764	7,303,924
Total		26,064,011	26,897,536	27,757,919	**28,829,228**

Source: *NDR Survey-Based on National Population Commission*

Method of Analysis

The use of simple statistical techniques like *tables, percentages, and charts*were employed to show distribution while the chi-square test statistics was used to test the hypothesis. The choice of this chi-square as a statistical tool is that it allows us to determine whether the observed group frequencies from the different population differ from what we would expect by chance alone. That is, it tells us whether observed differences in each population are random or not.

Chi- Square Formular

$$X_C^2 = \sum_{j=1}^{k} \frac{(o-e)^2}{e}$$

Where:

$e = \frac{Total\ of\ Observed}{N}$ is the expected frequency. (The expected frequencies are equal across the period of study)

O = the observed frequency (Total number of pedestrians using the footbridge)

N = Number of Footbridges (13)

Decision Rule

When the **P–Value < α (0.05)** at a given degree of freedom (df): Reject the Null Hypothesis(H_0)

When the **P–Value > α (0.05)** at a given degree of freedom (df): Accept the Null Hypothesis (H_0)

Hypothesis Testing

H_{01}: There is no significant difference between the observed and expected frequencies of foot-bridge usage among pedestrians in the Niger Delta Region

The above hypothesis was tested using the Goodness of fit Chi-Square.

Results and Discussion

Data Distribution

Table 2: Footbridge usage by States

S/N	State	Total no. that crossed the road	Usage	(%)
1	AkwaIbom	260	58	22.3
2	Cross River	338	11	3.3
3	Edo	134	57	42.5
4	Rivers	831	123	14.8
	Total	**1563**	**249**	**15.9**

Source: *Field survey, 2019/2020.*

Note: *Bayelsa and Delta State had no foot-bridges as at the time of this study*

From Table 2, in Rivers (Port Harcourt), a total of 831 road users who crossed the road were observed but only 123 made use of the bridge resulting to a usage level of 14.8%. Cross-river (Calabar) was the next, out of 338 road users who were observed crossing the road, only 11 were seen making use of the foot-bridge. This implies that the usage rate was at 3.3%. In Akwa-Ibom (Uyo), out of 260 road users who crossed the road, 58 made use of the foot-bridge accounting for a usage level of 22.3%. In Edo (Benin) out of the 134 pedestrians that crossed the road, only 57 of them made use of the foot-bridge giving it a usage level of 42.%.

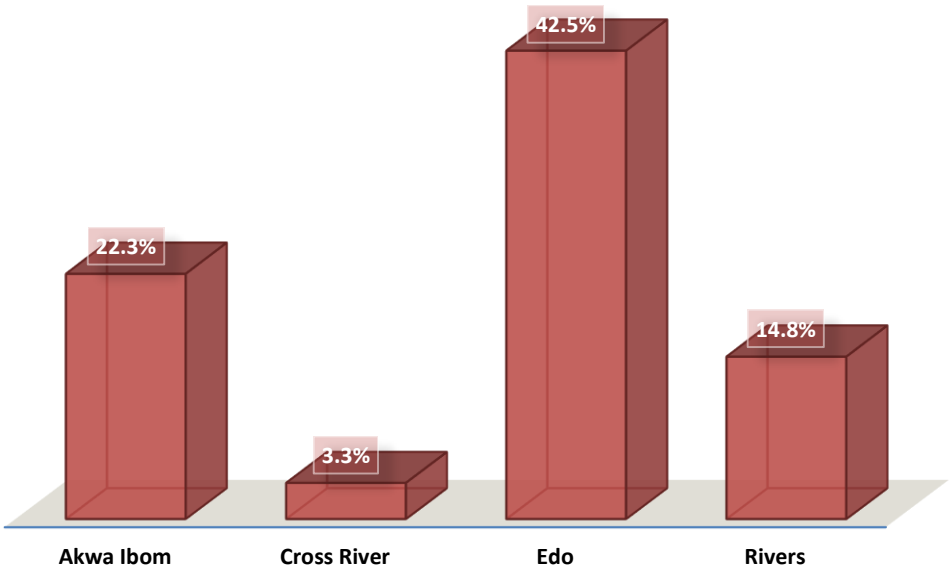


Figure 1: Percentage level of foot-bridge usage by State

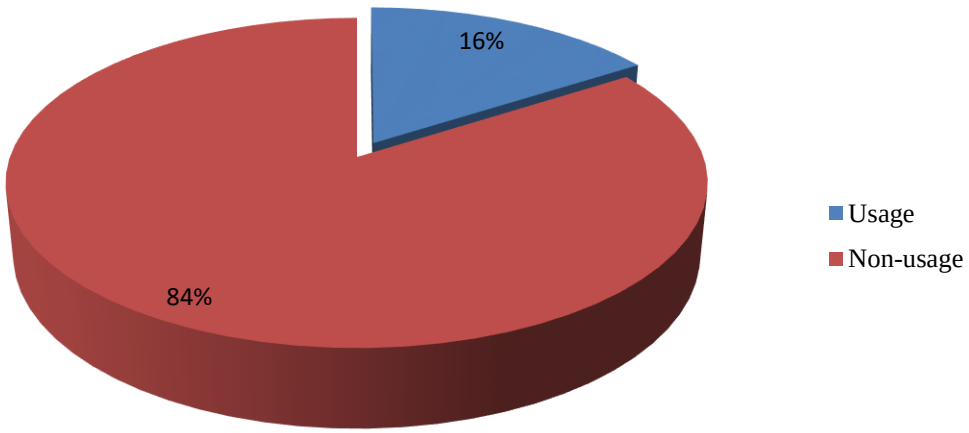


Figure 2: Level of foot-bridge usage in the Niger Delta Region

Contigency Table

Table 3: Showing Observed, Expected and Residuals of Foot-bridge Usage in the Niger Delta Region

Number of foot-bridges	Observed N	Expected N	Residual
1	0	19.2	-19.2
2	32	19.2	12.8
3	45	19.2	25.8
4	42	19.2	22.8
5	4	19.2	-15.2
6	0	19.2	-19.2
7	24	19.2	4.8
8	34	19.2	14.8
9	0	19.2	-19.2
10	0	19.2	-19.2
11	0	19.2	-19.2
12	11	19.2	-8.2
13	57	19.2	37.8

Source: Reseacher's Computation, 2019/2020

The frequency output reports on Table 3 shows that the observed, expected and residual frequencies for each group. The residual frequency is the difference between the expected (E) and the observed (O) frequencies and this is gotten by subtracting the expected from the observed frequencies.

Calculation of Chi-Square Statistics

Table 4: Chi-Test Statistics output

	Level of Compliance
Chi-Square	268.840[a]
Df	12
Asymp. Sig.	;2.000

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 19.2.

Source: Reseacher's Computation, 2019/2020

The Chi-square test statistics output on Table 4 revealed a chi-square value of 268.840 with 12 degrees of freedom (13 groups - 1 = 12) and a significance level of 0.000, which falls below the significant 0.05 alpha level, this showthat there is a statistically significant difference between the observed and expected values of foot-bridge compliance among pedestrians in the Niger Delta Region. Hence the null hypothesis was rejected. This also implies that the level of foot-bridge usage in the Niger delta region varies between states as affirmed by Fig 2 in that some states complied more to the use of foot-bridge than others. Although, this finding is contrary to that of Umah, *et al.*, (2019) who in their study on Pedestrian's Utilizations of Foot-bridge in Kano-Nigeria found out that 70% of the respondents were frequent users of the foot-bridge while 30% were found not be using it.

Concluding Remarks

The study concluded that the level of foot-bridge usage is low in the region and therefore recommends that:

- Education and robust public awareness programs should be conveyed through the media and billboards to all road users (pedestrians and motorist) to enable them apply same when using the pedestrian infrastructures; the awareness campaign could highlight on the traffic hazards associated with non-use of these pedestrian bridges.

- A daily news report through television and radio stations on pedestrian adherence to the use of pedestrian foot-bridges and its resulting effects on humans and the economy in general will also be impactful.

- The various states in the Niger Delta region should enforce the use of these pedestrian foot-bridge by engaging law enforcement agents like was done by the former Governor of Lagos (Gov. Ambode) in 2013, where the governor empowered officers of the Kick Against Indiscipline (KAI) to arrest anyone who crosses the road where there is provision for foot bridge, these offenders are charged to a mobile

court, where they could be asked to pay a fine or given community services to perform as punishment.

- In 2015, the house of representative tried to amend the Federal Road Safety Act. This amendment would enforce the use of pedestrian bridges, if passed offenders would get a fine of N20,000. This will assist in improving the utilization levels of the foot-bridges.

- Also, to strengthen Machinery towards educating children and youths about traffic/safety rules and regulations and also encourage the students at university level to take road traffic safety courses as a general course in their first year of study.

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CRUDE OIL PRICE AND MACRO-ECONOMIC UNCERTAINTY IN NIGERIA

OLELE, HILDA ENOH
Department of Economics,
Delta State University, Abraka.

Abstract

The recent perspective in the study of uncertainty which uses World Uncertainty Index (WUI) constructed from the frequency count of the word "uncertain" or its variants in the Economic Intelligence Unit (EIU) country reports has been extensively applied in evaluating the relationship between crude oil price and uncertainty in many developed and emerging nations of the world. It therefore became pertinent to apply this construct to Nigerian (a major oil revenue-fed economy) data to examine the relationship between crude oil price and uncertainty.Applying quarterly time series world uncertainty index and data from the Central Bank of Nigeriaspanning 2011:Q1 to 2020:Q1 in a vector autoregressive framework, the study finds a negative but insignificant relationship between uncertainty and crude oil price with no evidence of a causal relationship. However, a significant negative relationship and a uni-directional causality was found between gross domestic product and crude oil price. The study also established that crude oil price has the highest capacity to reduce spikes in uncertainty. The study therefore recommends among others a combination of policies such as diversification and development of alternative energy source aimed at reducing reliance on crude oil as the major driver of the economy which can potentially encourage stability in crude oil prices.

Keywords: *Uncertainty, Crude Oil, Vector Auto-regression, Impulse Response Function, Granger Causality*

JEL Classification: *D81, Q35, C32,*

Introduction

Unpredictability of oil price has become a common and predominant occurrence in recent times. Many reasons were attributed to this occurrence and prominent among them according to Yin (2016) is the sharp movements in oil demand and supply especially from fast growing emerging economies of the world like China (Lui et al, 2020; Killian and Vigfusson, 2011 and Hamilton, 2009), while others like Singleton (2013); Tang and Xiong (2012); Lombardi and Van Robays (2011) are of the opinion that arbitrage trading activities by index investors and extreme speculation are responsible for the movements in oil price. Hence, understanding the behavior of crude oil price and macroeconomic uncertainty has received renewed attention in the existing environment bedeviled with changes in the price of crude oil. In the views of Fattouh (2007), high crude oil price has the ability to slowdown economic growth, cause inflationary pressures, create international imbalances, increase uncertainty and discourage the much-needed investments in an economy and dis-stabilizing macroeconomic balance.

According to IMF (2019) Report, several factors were responsible for global economic downturn revision and key among these factors is rising uncertainty. Uncertainty could emanate from shocks in economic growth, weakened prospects for global demand, reduction in industrial production, political environment that could down-side risk to global investments, lack of clear-cut agenda of government and existing institutions that may arise from unprecedented occurrences like wars, natural disasters, epidemics and pandemics, etc. In the period of fluctuations in crude oil price, uncertainty is characteristically high and the pattern of movement or changes in oil price and uncertainty is indicative of a possible transmission link that has not been adequately documented particularly in Nigeria.

The causes and impact of uncertainty has attracted so much attention in economic discourse after the seminal work of Bloom (2009). Studies that has extensively dealt with this topic include Carriero et al., (2017); Baker et al., (2016); Ludvigson et al., (2016); Jurado et al., (2015); Caggiano et al., (2017,2014); Gilchristetal., (2014); Bachmann et al. (2013). Many other authors focused on the effect of uncertainty on macroeconomic performance (Fountas et al. 2006; Bhar and Hamori 2004; Grier and Perry 2000;).In the

views of Yin (2016), during the period of high oil price volatility, uncertainty is characteristically high and the pattern of movement or changes in oil price and uncertainty is indicative of a possible transmission link that has not been adequately documented particularly in Nigeria.

Recently, the relationship between crude oil price shocks and uncertainty has been vigorously debated in many developed economies like the US. {Albulescu, (2020) Rehman, (2018); Degiannakis et al.(2018), Kang et.al,(2017a, 2017b); Antonakakis et al., (2014); Kang and Ratti, (2013)}. Most of these studies focused specifically on economic policy uncertainty using the Baker, Bloom, and Davis (2016) media-based construct to establish the relationship between oil price shocks and economic policy uncertainty.

In Nigeria, studies on crude oil price were mainly focused on the impact of oil price shocks on economic growth (Adeniyi at al, 2011; Alley et al., 2014; Soile and Babajide 2015; Abdulkareem and Abdulkareem, 2016) or on business cycles (Aigheyisi, 2018) or other macroeconomic variables (Olomola, 2006; Ani et al, 2012). The information available during this research didn't find evidence of any study on the Nigerian economy that is focused on the relationship between uncertainty and crude oil price. None of these analyses focused on how oil price shocks can be transmitted into the economy through uncertainty or if there exist a causal relationship between the two variables in the Nigerian economy. Again, most of the studies in the US used the Baker, Bloom, and Davis (2016)media-based construct. In this analysis, the newly developed World Uncertainty Index (WUI) by Ahir, Bloom and Furceri (2018) was employed. The WUI is a new measure of uncertainty which is available for 143 countries and it is constructed by tracking uncertainty across the globe and text mining the country reports of the Economist Intelligence Unit (EIU). Specifically, the index is computed by counting the frequency of the word "uncertain" or its variant in the EIU country reports and then normalized by the total number of words before rescaling by multiplying by 1000. The lower the computed index, the lower the uncertainty and the higher it is, the higher the uncertainty. The disaggregated and aggregated data by region and country can be accessed at: www.worlduncertaintyindex.com.

The objective of this study is specifically to examine the existence of a causal relationship between crude oil price and uncertainty in Nigeria using the world

uncertainty index. This study is sectioned into five parts. The first section focuses on introduction, followed by the second which is the review of related literature while method of study is discussed in section three. Section four presents on results and discussion of the findings and section five finally concludes and proffered recommendations based on the research outcomes.

Literature Review

Extensive literature exists on the relationship between oil price and selected macroeconomic variables in Nigeria. Omisakan (2008) in a study examined the impact of oil prices on government consumption expenditure, consumer price index and money supply in Nigeria. The result submits that oil price exerts a sustainable impact on most of the variables. In a similar research, Akpan (2009) examined oil price shocks on the Nigerian economy with focus on the asymmetric effects. Empirical findings suggest the existence of a significantly positive relationship between positive components of oil price changes and real government expenditure while oil price shocks exhibited marginal but a significant increase on real exchange rate. Aliyu (2009), in the investigation of oil price shock and macroeconomic behaviours employed a linear and non-linear oil price specification. The study reported evidence of both shocks on real Gross Domestic Product (GDP). Adeniyi, Oyinlola and Omisakin (2011) in a study, investigated the impact of oil price shocks on output growth in the Nigerian economy, incorporating threshold effects using quarterly data from 1985-2008 within a regime-dependent multivariate threshold autoregressive model, impulse response function and forecast error decomposition framework. The result indicated that oil price shocks do not explain a substantial proportion of the movements in macroeconomic aggregates in Nigeria and even so with threshold effects.Ani et al, (2012) applied the OLS and Granger Causality test to time series data spanning 1980-2010 in a multivariate framework to investigate the relationship between oil prices and selected macroeconomic variables. Findings suggest that oil price has no significant impact on economy.

Contrarily, the study of oil price shocks and volatility of selected macroeconomic indicators in Nigeria carried out by Taiwo, Abayomi and Damilare (2012) using Johansen Co-integration Test and Error Correction Model indicated that crude oil price, stock price and exchange rate have

significant influence on the growth of the Nigerian economy. Oriakhi and Osaze (2013) examined the consequences of oil price volatility on the growth of the Nigeria economy within the period 1970 to 2010. With the use of VAR model, the study revealed that oil price volatility has direct impact on government expenditure, real exchange rate, and real import while real GDP and inflation are indirectly influenced by the oil price volatility.

Abdulkareem and Abdulkareem (2016), investigated oil price volatility and macroeconomic performance in Nigeria using daily, monthly and quarterly data and employed GARCH, GARCH-M EGARCH and TGARCH models. The result from the analysis showed that the Nigerian economy is vulnerable to both internal and external shocks and oil price is a key cause of volatility in Nigeria. Soile and Babajide (2015) examined the impact of oil price shocks on economic activities in Nigeria from 1980 – 2011 using quarterly data within a vector auto-regression analytical framework. The analysis revealed that oil price fluctuation has devastating effects on economic activities in Nigeria. Alley et al (2014) using data from 1981–2012 in a general methods of moment (GMM) analytical framework, investigated the relationship between oil price shocks and economic growth in the Nigerian economy. The result showed that oil price improves economic growth while oil price shock slows down economic growth though not significantly.

In another twist, Abeng (2016) focused on the impact of oil price fluctuations on five sectors of the Nigerian stock market. The result from this analysis showed that fluctuations in oil price has no significant influence on food beverage and tobacco sector performance but does on the other four sectors. Agusman and Deriantino (2008) and McSweeney and Worthington (2007) study on the Indonesian and Australian stock markets also reported similar results.

Olomola (2006) in a vector auto-regression analysis, focused on the effects of oil price shocks on macroeconomic variables (inflation, money supply, output and real exchange rate) in Nigeria. Empirical analysis suggests a mixed relationship between oil price fluctuation and the macroeconomic variables. Apere and Eniekezimene (2016) also examined the effect of crude oil fluctuation on the Nigerian economy from 1981-2013 in a VAR framework.

The empirical result suggests that changes in oil price have a significant positive impact on economic growth.

Chiweza and Aye (2018) in a paper investigated the relationship between oil price uncertainty and the growth of key macroeconomic variables in South Africa from 1980 – 2015 using monthly data analyzed with the Structural Autoregressive (SVAR) methodology as well as Generalized Impulse Response Function (GIRF) and Generalizes Forecast Error Variance Decompositions (GFEVDs). The result from this study revealed that oil price uncertainty shock has a persistently undesirable effect over time on most of the macroeconomic variables used in the analysis. The study therefore concludes that oil prices play significant role in the economy of South Africa particularly in the presence of price uncertainty shocks.

Yang (2019) analyzed the connection and causality between economic policy uncertainty and oil price shocks across time scales in the US economy by adapting and modifying the Diebold and Yilmaz (2009, 2012, 2014) structural vector auto-regression framework to include a wavelength approach. The result showed that crude oil prices act like a conduit of information from economic policy uncertainty, time scales notwithstanding. Also, there exist an intensified causal relationship between crude oil prices and economic policy as time scale grows.

In all of the studies reviewed on the impact of oil price on macroeconomic activities in the Nigerian economy to the best of our knowledge, none was focused on examining the relationship between the crude oil price and macroeconomic uncertainty in the Nigerian economy using the World Uncertainty Index, hencethis study intends to show if crude oil prices is a source of macroeconomicuncertainty in the Nigerian economy or/and vice versa.

Method of Study

Data Sources

This study employed quarterly data obtainedfrom different sources spanning 2011Q1 -2020Q1. The data for uncertainty was obtained from the World Uncertainty Index (WUI) database developed by Ahir, Bloom and Furceri

(2018). The WUIis a new measure of uncertainty which is available for 143 countries and it is constructed by tracking uncertainty across the globe and text mining the country reports of the Economist Intelligence Unit (EIU). Specifically, the index is computed by counting the occurrence or frequency of the word "uncertain" or its variant in the EIU country reports and then normalized by the total number of words before rescaling by multiplying it by 1000. The lower the computed index, the lower the uncertainty and the higher it is, the higher the uncertainty. The disaggregated and aggregated data by region and country can be accessed at:www.worlduncertaintyindex.com. The data for Gross Domestic Product (GDP) were obtained from various issues of the Central Bank of Nigeria Statistical Bulletins and Crude OilPrice data were obtained from Organization of Petroleum Exporting Countries (OPEC) database. In all, three variables were used in this study: Uncertainty, Crude Oil Price and Gross Domestic Product (GDP). All variables are presented in log form.

Method of Data Analysis

The vector auto-regression (VAR) analytical framework was employed in this study.The choice of this method was hinged on the fact that all the variables were integrated of order one, I(1); a necessary condition for employing the VAR analytical method. Usually, the use of VAR is justified after establishing the stationarity status of the variables constituting the VAR model. Chuku, Ekpeno and Ndifreke (2010) reported that if the time series have unit roots, the stability condition of VAR will be compromised, meaning that the usual statistical techniques of coefficient evaluation will be invalid. When this happens, Wooldridge (2006) recommended that the cointegration and vector error correction modelling be utilized in examining the multivariate relationship among the variables. Hence in this analysis, preliminary diagnostics were conducted on the properties of the time series variables. The analysis started with testing for the presence or otherwise of unit roots using the Dickey and Fuller (1979,1981) augmented Dickey -Fuller (ADF) test. Thereafter, the cointegration test was performed using both trace and eigen values. If there are cointegrating equations, then both short run and long run VAR models will be analysed and if there are no cointegrating equations, then only the short run analysis is done.

The VAR Model

The VAR model takes all the variables as endogenous and regresses each current variable on laggedvaluesofallthevariables inthemodellaggedacertainnumberoftimes. The model specified for this study is given as:

$$lwui_t = \boldsymbol{\beta}_o + \boldsymbol{\beta}_1 lgdp_{t-1} + \boldsymbol{\beta}_2 lcrdop_{t-1} + \boldsymbol{\beta}_3 lwui_{t-1} + U_t \quad (1)$$

$$lcrdop_t = \boldsymbol{\beta}_o + \boldsymbol{\beta}_1 lgdp_{t-1} + \boldsymbol{\beta}_2 lcrdop_{t-1} + \boldsymbol{\beta}_3 lwui_{t-1} + U_t \quad (2)$$

$$lgdp_t = \boldsymbol{\beta}_o + \boldsymbol{\beta}_1 lgdp_{t-1} + \boldsymbol{\beta}_2 lcrdop_{t-1} + \boldsymbol{\beta}_3 lwui_{t-1} + U_t \quad (3)$$

where:

lwui = log of uncertainty index
lcrdop = log crude oil price
lgdp = log of quarterly gdp

The lag length of the model was chosen using the Akaike Information Criterion (AIC) which puts it at lag one. The hypothesis is that ceteris paribus, a significant relationship exists between uncertainty, crude oil price and gross domestic product.

Stationarity Tests

One condition that must be met before adopting the VAR technique is to establish the presence or otherwise of unit roots in the variables. If the series are found to have unit roots, the stability condition of the VAR will be compromised (Chukwu, Effiong and Sam, 2010). Hence, the stationarity test propounded by Dickey and Fuller (1979,1981); the Augmented Dickey-Fuller (ADF) to evaluate the stationarity of the variables. The test estimation process is of this form:

$$\Delta y_t = a_o + a_1 t + \delta_1 y_{t-1} + aj\sum_{i=1}^{n} \Delta yt = 1 + e_t \quad (4)$$

whereyt is the lag difference of the variable under consideration and n is the number of lagswhile et is the error term. The unit root test is done using the following hypothesis:

H0: $\delta 1 = 0$

H1:$\delta 1<0$
$\delta 1 = \rho - 1 = 0$

The critical values of the ADF statistics lead to rejection or acceptance of the null hypothesis. The acceptance of the null hypothesis connotes that the series is non-stationary or has a unit root while rejection mean that the series is stationary. If the series are non-stationary, they need to be differenced to be stationary to determine the order of integration of the variables. The test was applied to each of the variables in the model.

Results and Discussion

The values of the mean, median, maximum and minimum values as well as normality indicators of the variables used in this analysis are presented in table 1. The mean, values of the variables show very marked variations in magnitude which evidently indicates that estimating any model with such variable characteristics in levels may yield inconsistent estimates hence justifying the need for an examination of the stationarity status of the model.

Table 1- Descriptive Statistics

Variables / Statistic	GDP	CRDOP	WUI
Mean	23,613,348	78.85543	0.1452
Median	23737297	68.33978	0.1349
Maximum	40,029,725	118.5416	0.2681
Minimum	8,708,429	34.3577	0.0540
Standard Deviation	9,019,625	27.4481	0.0543
Skewedness	-0.192673	0.131037	0.478836
Kurtosis	2.141818	1.395800	2.570537
J-B	1.364321 (0.05522)	4.073302 (0.130465)	1.698258 (0.437787)
Observation	37	37	37

Source: *Author'scomputation*

Pre-estimation Tests

Stationarity Test

The Augmented Dickey Fuller (ADF) test was employed in testing for the presence or otherwise of unit roots in the variables.The result of the ADF test reported in table 2 failed to reject the null hypothesis of non-stationarity in the variables at levels but didn't after first differencing, thus the variables are integrated of order one.

Table 2- Augmented Dickey Fuller unit root test

Variables	Levels			1st Difference			Order
	ADF Test Stat	5%	Inference	ADF TS	5%	Inference	
Lwui	2.312	-3.556	NS	-4.732	-3.560	S	1(I)
Lcrdop	-1.50	-3.556	NS	-5.344	-3.560	S	1(I)
Lgdp	-2.807	3.556	NS	-6.350	-3.56	S	1(I)

Source: Author's computation

Co-integration test

The results of both the trace and eigen statistics at 5% critical level revealed that there are no cointegrating relationship among the variables. Therefore, only the short run VAR relationship was estimated.

Table 3: Co-integration test

Max Rank	Trace Statistics	5% Critical Value	Max rank	Max Eigen Statistics	5% Critical Value
0	17.87	29.68	0	12.44	20.97
1	5.43	15.41	1	2.92	14.07
2	2.51	3.76	2	3.51	3.76

Source: Author's computation

In the VAR model, each variable is taken to be endogenous and it is estimated using lagged values of the dependent and all the other variables in the model. In order to obtain the estimates of the coefficient, the number of lags to be imputed must be determined because the inclusion of too many lags could lead

to multicollinearity, serial correlation of the error term, loss of degree of freedom and useful observation. Using the Akaike Information Criteria (AIC) for lag selection, the lag was restricted to one.

Table 4: Lag selection Sample: $2011Q_1$–$2020Q_1$

Lag	AIC	HQIC	SBIC
0	-3.0443	-2.99866	-2.90838
1	-6.90412*	-6.72101*	-6.35993*
2	-6.7684	-6.44797	-5.81607
3	-6.57373	-6.11597	-5.21327
4	-6.61765	-6.02257	-4.84905

Source: Author's computation

The Estimated VAR Model

The findings from this analysis presented interestingly mixed results (Table. 5). In the uncertainty model, the variables explain 40 percent of the variation in uncertainty in Nigeria. Ceteris paribus, a rise in one period lag of GDP and crude oil prices lead to a fall in uncertainty and vice versa when the GDP and crude oil price models are considered although the relationships are not significant. Specifically, a one percent increase in one period lag of uncertainty results in a decline of 0.0402 percent in GDP and 0.039 percent in crude oil prices while a one percent rise in a one period lag of crude oil prices and GDP leads to a fall of 0.168 percent and 0.137 percent in uncertainty respectively. A look at the magnitude of the impacts of the independent variables on the dependent variables suggest that the impact of crude oil prices has the greatest magnitude on uncertainty (17 percent). However, the relationship between crude oil price and GDP were somewhat mixed as expected. While an increase in one period lag of GDP significantly lead to a decrease in crude oil price at the 10 percent significance level, an increase in crude oil price leads to an increase of 0.03 percent in GDP. The GDP and crude oil price models have very good fit, explaining 94 and 89 percent of the variation in these models. The observed relationship between uncertainty, GDP and crude oil price is consistent with the reports of Sušjan and Redek (2008), Jackson, Kliesen and Owyang (2019,) which records that uncertainty negatively impacts economic growth. This is true because during period of

rising uncertainty, consumers cut back on consumption expenditure, businesses usually reduce production and employee compensation and delay investment decisions and financial markets become more volatile with high risk premiums as a result of rising financing costs.

Table 5 - The VAR model Estimates

	$lwui_t$	$lgdp_t$	$lcrdop_t$
$lwui_{t-1}$	0.5665(3.32)*	-0.0402(-0.64)	-0.0392(-0.57)
$lgdp_{t-1}$	-0.1374(-0.74)	0.8958(13.0987)*	-0.1492(-1.96)**
$lcrdop_{t-1}$	-0.1681(-0.79)	0.0344(0.404)	0.8112(9.41)*
C	0.9461(0.59)	0.8101(1.37)	1.4042(2.17)*
R^2	0.4026(0.0000)	0.9355(0.0000)	0.8876(0.0000)
RMSt	0.137321	0.050609	0.055553
Chi^2	24.25663 (0.0000)	521.961 (0.0000)	284.3307 (0.0000)
Loglikelihood =140.1729, AIC=-7.120704, HQIC= -6.926474, SBIC= -6.592864			

**, **, indicates 5% and 10 % significance level*
Source: Author's computation

Granger Causality

The Wald test for granger causality show that there is a uni-directional causality between crude oil price and GDP but none between crude oil price and uncertainty. This confirms what is already known of the oil-driven Nigerian economy and suggests that changes in crude oil price could have dilapidating effects on the economy and calls for intensified efforts at diversifying the economy. However, there is no evidence to suggest that there is a causality between crude oil price and uncertainty in Nigeria. This of course is contrary to expectation because for an oil dependent economy like Nigeria, it is expected that changes in the price of crude oil could cause changes in uncertainty and vice versa.

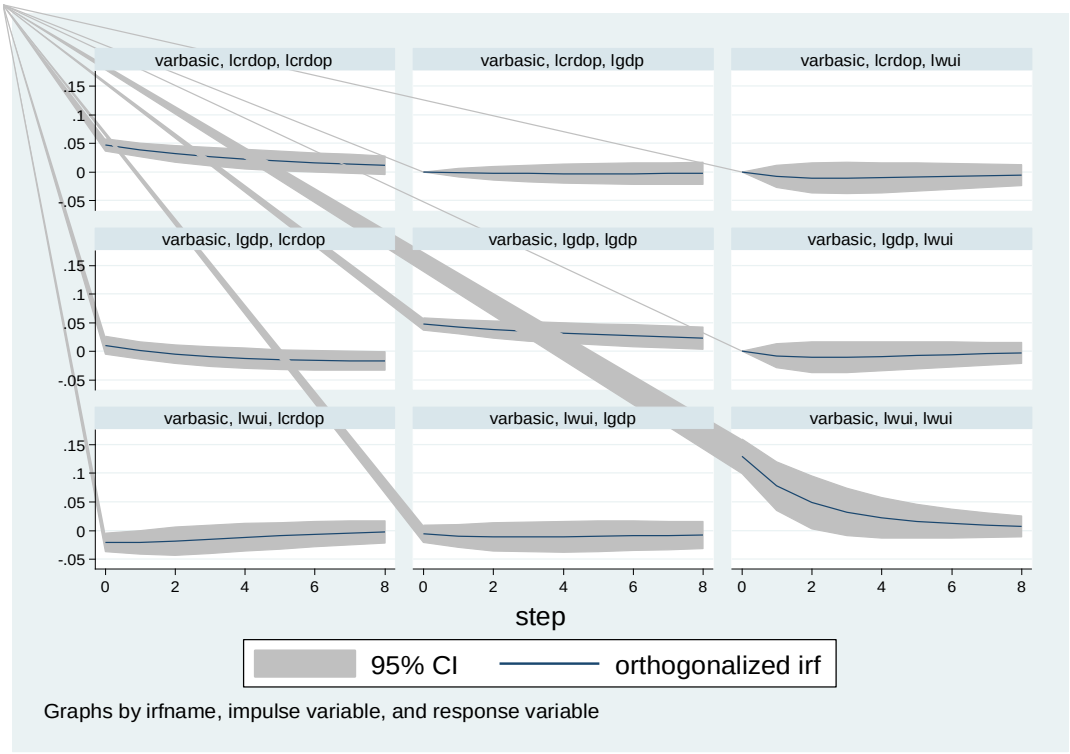
Table 6: Granger Causality Wald Test

Equation	Excluded	Chi^2	d.f.	Probability
Lwuilgdp		0.54284	1	0.461
Lwuilcrdop		0.62255	1	0.430
Lwui	ALL	0.6676	2	0.716
Lgdplwui		0.40779	1	0.523
Lgdplcrdop		0.19218	1	0.661
Lgdp	ALL	0.42528	20.808	
Lcrdoplwui		0.3213	110.571	
Lcrdoplgdp		3.9111	10.048	
Lcrdop	ALL	4.6276	10.099	

Source: Author's computation

Impulse Response Function

Fig.1: Impulse Response Graph



Source: Author's computation from Stata 13

The orthogonalized impulse response function (OIRF) graphs are presented in Fig. 1. The OIRF is computed from the coefficient of vector regression which employs the orthogonalized set of residuals and it traces the effects of a standard deviation shock on the target variable on current and future values of the endogenous variables in the system. The impulse response functions graphs show no serious perturbations in response shocks between the variables.

In the crude oil price function, a standard deviation shock in GDP resulted in a decrease in crude oil price from the short to the long run periods and a shock in uncertainty led to observed perturbations from the short to the long run. In the GDP function, a standard deviation shock in crude oil price resulted to a gradual decrease in GDP between the 3rd and the 6th periods which however became stable in the long run while GDP recorded a slight decline from the 1st period up to the 6th period and stable in the long run with a standard deviation shock in uncertainty. The response of uncertainty to a standard deviation shock in crude oil price and GDP exhibited similar patterns; a fall in the short run period down to the long run.

The Lagragian multiplier test and VAR stability test were carried out to check for autocorrelation and the stability of the VAR model respectively. At one lag, the null hypothesis of no autocorrelation cannot be rejected while all the Eigen values for the VAR stability test satisfies the conditions for stability since all the eigenvalues lies within the unit circle.

Post-Estimation Test

Table 7: Post Estimation Tests

Lagragian Multiplier Test				VAR Stability test (Eigen value stability condition)	
Lag	Chi^2	Df	Prob	Eigen values	Modulus
1	10.6287	9	0.30202	0.9317728	0.931773
2	9.3319	9	0.40722	0.8250771	0.825077
				0.5166046	0.516605

Conclusion and Recommendations

Economic theory suggests that uncertainty is negatively correlated with business cycles and exacerbates the effects of recessions through delay in firms' investment and hiring decisions and can bring about undermining the effectiveness of economic policies i. In recent times, the plummeting and rising of crude oil prices brought about by the corona virus pandemic, has monopolized global public agenda, bringing about changes in the direction of economic policies of nations and bringing to bear the importance of uncertainty and how it can serve as a channel of transmission of oil price shock to the macro-economy or if crude oil price is the conduit of transmission of uncertainty to the economy; establishing a uni- or bi-directional causality. The findings from this study could not provide any evidence to the existence of any form of causal relationship between crude oil price and uncertainty but provided a uni-directional causal relationship between crude oil price and GDP. Also, the result showed that a negative but insignificant relationship exist between crude oil price and uncertainty. This suggests that in an oil dependent economy, rising crude oil prices is synonymous with increased confidence in the strength of the economy hence the fall in uncertainty which crowds in investment and other growth enhancing initiatives.

It is pertinent however to state here that global crude oil prices are usually not within a singular economy's control and so the fluctuations in it are sometimes unavoidable and unpredictable such that controlling for it becomes almost impossible as in the case of the global corona virus pandemic. However, domestic factors that can cause spikes in uncertainty are to be avoided because failure to do so could have overwhelming consequences. This therefore mean that sole dependence on one source of revenue could have devastating consequences as shown by the negative nonetheless insignificant relationship between uncertainty and GDP.

Finally, this study finds a negative and significant relationship between crude oil price and GDP. In other words, rising GDP brings about significant decline in crude oil prices. This could mean that improvements in the contribution of other sectors of the economy to GDP could undermine the development of the crude oil sector particularly given the performances of sector like services and agriculture in recent times. If this happens, it may not augur well for the

economy as the current advocacy is in favour of divesting into newer growth enhancing projects while improving on existing ones.

In view of these, the study therefore recommends a combination of policies that encourages stability in crude oil prices since crude oil prices has the greatest capacity to cause spikes in uncertainty. Also, creating an enabling environment for divestment into newer growth project while improving on current ones should be rigorously pursued.

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CHALLENGES ASSOCIATED WITH THE USE OF FOOT-BRIDGE FACILITY IN THE NIGER DELTA REGION, NIGERIA.

[1]DAMINABO, SARAH I & [2]OSI S. AKPOGHOMEH

[1]Centre for Logistics and Transport Studies,
University of PortHarcourt
[2]Department of Geography and Environmental Management,
University of Port Harcourt

Abstract

The exponential growth of vehicular traffic has exposed pedestrians in the Niger Delta Cities to accidents and are marginalized with the mobility networks.The aim of this study was to evaluate the challenges associated with the use of foot-bridge facility in the Niger Delta Region. The cross-sectional survey research design was used as a blueprint while the questionnaire wasused to gather data for this study. The descriptive statistics was used for the analysis.The expressed opinion of the respondents revealed that in the Niger Delta Region the major challenges associated with the poor use of footbridge facility were dilapidated structures such as broken floor andpoor construction of the foot-bridges. The study recommends that dilapidated foot-bridges as a matter of urgency needs complete reconstruction, to be attractive to pedestrians to make use of.

Keywords: *Challenges, Foot-bridge, Pedestrians*

Introduction

The increasing number of flyovers coupled with speed, the frequency of accidents involving the pedestrians is on the increase therefore in order to ensure the entitlement of the pedestrians in terms of mobility, safety and convenience, slow and fast vehicular traffic crash barriers, such as dividers and pedestrian railing on the central verge or media are often provided, including the foot-over bridges (FOB). Many at times, the FOB's and pedestrian crossings are underused or neglected along major roads where they are erected. As a result, the pedestrians are seen jaywalking and climbing over the barriers and railings in order to cross highway, high speed roads and flyovers. Thus, it is necessary to provide wide, conducive/convenient and safer pedestrian corridors (Demirbz*et al.*, 2015).

According to theNational Highway Traffic Safety Administration (NHTSA, 2018) report, Pedestrians are involved in 13% of vehicle-related fatalities. In response to the high rate of loss of lives and properties along major highways, foot-bridges were introduced on roads yet compliance to the use of these footbridges has been low especially in developing countries including the Niger Delta region of Nigeria.Ritzatiet al., (2013) identified several factors such as fence installation, directional flow, existing of median, vehicle volume and the distance of this facility as challenges affecting the utilization of the crossing bridges inKuala Lumpur, Malaysia.It is against this background that the study examines the challenges associated with the use of foot-bridge in selected states of the Niger Delta Region of Nigeria.

Literature Review

Empirical Review

Rasanen, et al., (2007) in their study with on the use of foot-bridge crossings found out that the use of foot-bridge facilities was a habitual action rather than being a pedestrian's coincidental behavior. From this outcome, it was concluded that people who utilize the foot-bridge in the past are more likely to use it in the future, and those who usually cross on the street level are going to do so as well. Some other studies found that the main factors of shunning

away from the foot-bridges are: lack of time, laziness and the fear for attacks and robbery.

A study was therefore done by the Department of Civil Engineering, Zarqa University (2013) to evaluate the pedestrian bridges and safety and to relate the percentage use of pedestrian bridges with the possible factors affecting the use of pedestrian bridges using the Regression model. To achieve the objective of the study, samples of pedestrian bridges were chosen especially those found at dangerous crosswalk locations and the following were concluded from the result:

- The pedestrian bridges have a positive impact and a great potential of reducing number of pedestrian fatalities.
- The main factors that were affecting the use of pedestrian bridges are the posted speed limits, the overall width of the crosswalk and the existence of median barrier.
- Results of the analysis revealed the main causes of pedestrian accidents as factors related to the pedestrian, such as ignoring traffic controls and crossing at inappropriate locations and disregarding caution. On the other hand, factors related to the driver are more common, such as speed, disregarding crosswalks and violations of traffic control devices. Effective countermeasures were proposed to reduce the frequency and severity of pedestrian accidents in Jordan.
- The role of pedestrian bridge is not being fully implemented, because over 60 percent of pedestrians still choose not to use the pedestrian bridges for varied reasons. Females use it more than males and children more than adults do.
- Reason of not using the bridge include the discomfort and waste of time due to extra walking distance, the high stairs, health reasons or fear of safety/security.
- The provision of crosswalks/ pedestrian bridges next to schools, decreases injuries to children by car accidents drastically.
- Pedestrian bridges or overpasses are appropriate when there is high speed or high traffic flow, where there is considerable pedestrian delay or high pedestrian accident problems. Proper evaluation of these

parameters can help in identifying the most appropriate locations for installing pedestrian bridges.

Theoretical Review

Configurational Model

Configurational model emphasizes on the role that various aspects of the built environment have on influencing pedestrian movement dynamics. The most well researched and widely utilized application of configurational approaches is the space syntax approach, which originated at the University College London in the United Kingdom in the early 1980's (Hillier and Hanson, 1984). Over 300 articles and four books have been published using space syntax, as well as a variety of reviews which focus on space syntax. The method has also been used successfully in a variety of applied planning and transportation studies in the United Kingdom and abroad (SSL, 2004). The space syntax approach is based on measuring objective patterns of spatial relationships and linking these to patterns of movement within urban environments (Hillier *et al* 1993). This is done through topological, graph-based analysis of pedestrian networks, which represents accessible spaces as nodes in a graph and processes their relationships using standard graph theory measures (Hillieret al., 1993). This model is linked to this study in that pedestrians in the region have difficulties in assessing built pedestrian infrastructures.

Methodology

Research Design

The cross-sectional research survey design was used for this study. The choice of this design is due to the fact that it enabled the researcher to ask random sample of individual questions about their backgrounds and past experiences as well as the challenges they face in using footbridges in the region.

Participants

The population for this study consisted of pedestrians in the capital cities of the Niger Delta region of Nigeria. The pedestrians comprised of school children (primary and secondary school children), the aged (Elderly road

users), the hawkers (those that hawk things along traffic and major roads were pedestrian footbridges are located), young adults, and wheel barrow peddlers.

Study Area

The research study area is the Niger Delta region of Nigeria. The Niger Delta region consists of nine (9) states and they are Abia, AkwaIbom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo and Rivers. However, the study focuses on six (6) out of the nine (9) states. The states include AkwaIbom, Bayelsa, Cross River, Delta, Edo and Rivers. Consequently, the choice of the states was informed by the need to analyse the level of pedestrian foot-bridge usage in the states historically connected traditions and lifestyles. The traditional occupation of people in this area is predominantly fishing and farming.

Table 1: Population Projection of Selected Niger Delta States/Capitals

State	Capital	2013	2014	2015	2016
AkwaIbom	Uyo	4,785,078	4,950,568	5,121,781	5,482,117
Bayelsa	Yenagoa	2,088,154	2,149,597	2,212,849	2,277,961
Cross River	Calabar	3,544,120	3,648,404	3,755,757	3,866,269
Delta	Asaba	5,144,961	5,312,262	5,485,004	5,663,362
Edo	Benin	3,906,039	4,012,938	4,122,764	4,235,595
Rivers	Port Harcourt	6,595,659	6,823,767	7,059,764	7,303,924
Total		26,064,011	26,897,536	27,757,919	28,829,228

Source: *NDR Survey-Based on National Population Commission, 2016*

Research Instrument

The research instrument used in this study is the structured questionnaire. This was directed to the respondents (road users). The questionnaire was administered to the respondents in order to ascertain information about the challenges associated with the use of foot-bridge facilities in the Niger Delta region of Nigeria.

Validity and Reliability of the Research Instrument

A pilot test was conducted from sampled population for the purpose of establishing the validity of the research instrument before administering to the target population. The result of the pilot test was used to correct vague noticed in the initial draft of the instrument. The content validity of the instrument was assessed by a Lecturer in the Department of Geography and Environment, University of Port Harcourt.

Sample and Sampling Techniques

The survey was carried out on all road users. A systematic sampling technique was used in administering the instrument. The reason for this approach was to give room for every category of pedestrian to be selected. On each of the foot-bridge, the instrument was administered by selecting each respondent after the interval of two.

In determining the sample size for this research, the Taro Yamane's formula given as *(equ 1)* will be used:

$$n = \frac{N}{1 + N(e)^2} \quad \text{..... (equ 1)}$$

Where:

n = sample size
N = population size (28,829,228)
e = level of significance (our level of significance is chosen at 5%)

Applying the formula at significant level of 5%;

$$\frac{28{,}829{,}228}{1+28{,}829{,}228\,(0.05)^2} = \frac{28{,}829{,}228}{72{,}074.07} = 399.99$$

Therefore, the calculated sample size was approximately 400. However, for more reliability of the sample mean as an estimator of the population, the sample size was increased by 100% to give a sample size of 800 for the study. Thereafter, a total of 580 road users were sampled. This figure excluded road users fromBayelsa and Delta which do not have foot-bridges at the time of this survey. Furthermore, a total of 483 questionnaires were retrieved and used for the analysis (See Table 2).

Table 2: Computed Sample Size Proportional Allocation to Selected Niger Delta States

S/No.	Niger Delta State	Capital	Population of capital city	Sample size (principle of proportionality)
1	AkwaIbom	Uyo	5,482,117	$\frac{5,482,117}{28,829,228} \times 800 = 152$
2	Bayelsa	Yenagoa	2,277,961	$\frac{2,277,961}{28,829,228} \times 800 = 63$
3	Cross River	Calabar	3,866,269	$\frac{3,866,269}{28,829,228} \times 800 = 107$
4	Delta	Asaba	5,663,362	$\frac{5,663,362}{28,829,228} \times 800 = 157$
5	Edo	Benin	4,235,595	$\frac{4,235,595}{28,829,228} \times 800 = 118$
6	Rivers	Port Harcourt	7,303,924	$\frac{7,303,924}{28,829,228} \times 800 = 203$
	Total		28,829,228	800

Source: *Researchers field survey, 2019*

Method of Data Analysis

The use of simple statistical techniques like tables, percentages, and chartswere employed to show distribution. The adoption of descriptive statistics is to enable the researcher get an express opinion of the participants.

Results and Discussion

Data Distribution

Table 3: Questionnaires Administered to the Respondents

S/No.	State Capitals	Number of administered questionnaire	Number of questionnaire retrieved	Response Rate (%)
1	Uyo	152	102	67.1
2	Yenagoa	0	0	0
3	Calabar	107	84	78.5
4	Asaba	0	0	0
5	Benin	118	105	88.9
6	Port Harcourt	203	192	94.6
	Total	**580**	**483**	**83.3**

Source: *Field Survey, 2019/2020.*

Table 3 shows the distribution of questionnaires to respondents in individual states. The Table shows that Yenegoaand Asaba have no foot-bridge as at the time of this research,hence no questionnaire was administered to those city capitals. Consequently, the sample size was reduced to 580. Furthermore, a total of 483 questionnaires were retrived and used for analysis (see Table 2 and 3).

Challenges Associated with Foot-bridge Usage

The challenges associated with the use of foot-bridge compliance in the Niger Delta region are shown in Table 4 and Fig. 1,state by state.

Table 4: Summary of Challenges of Foot-bridge Usage Acrossthe Niger Delta Region

S/N	Challenges	AkwaIbom	Cross River	Edo	Rivers	Grand Mean (Relative %)
1	Dilapidated structures such as broken floor	3.17	3.15	3.23	3.11	3.17(45.3)

2	They are poorly constructed	2.99	3.08	3.25	3.16	3.12 (44.6)
3	Lack of shelter or cover	2.78	2.81	2.80	2.96	2.86(40.9)
4	Robbery cases	2.72	2.80	2.97	2.85	2.83(40.4)
5	Absence of Railings	2.69	2.73	3.11	2.72	2.81(40.1)
6	Inadequate space to accommodate high volume of users	2.25	2.42	2.81	2.56	2.53(36.1)
7	Kidnapping	2.31	2.26	2.49	2.26	2.33(33.3)

Mean Criterion: If mean score is greater than the mean criterion of 2.50 we accept the factor otherwise reject.
Source: *Researchers field work 2019/2020*

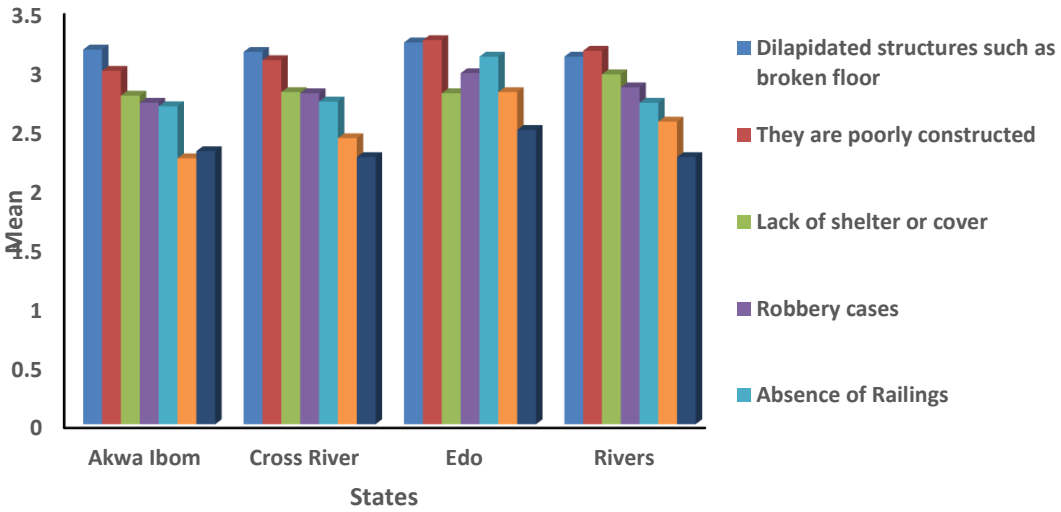


Figure 1: Challenges of foot-bridge usage across the Niger Delta Region

Table 4 and Fig 1show relative contribution of each challenge associated with the use of foot-bridge facility in the Niger Delta region of Nigeria. It shows that dilapidated structures such as broken floor had a higher percentage of

45.3% when compared to other challenges, they are poorly constructed (44.6%), Lack of shelter or cover during sun or rain (40.9%), robbery cases (40.4%), absence of railings (40.1%), Inadequate space to accommodate high volume of users (36.1%) and kidnapping (33.3%). The following sub-sections discussed each perceived challenge in ascending order;

- **Dilapidated Structures**



Plate 1: Showing the dilapidated state of the foot-bridge at presidential/federal secretariat, Port Harcourt

Table 4 shows that dilapidated structures was a major concern associated with the use of footbridge facility in the Niger Delta Region as it ranked 1st with a mean value of 3.17. Plate (1) clearly shows that the foot-bridge structures available in this region are poorly maintained; shaky structures, broken floor, rusted railings etc. This also coincides with the study of Hilary *et al.,* (1993) who opined that infrastructure collapse is as a result of poor maintenance, poor materials and dilapidated suspended bridges.

Poorly Constructed Foot-bridges



Plate 2: Showing poor construction of the Foot-bridge at Watt market, Calabar

This challenge ranked 2nd from the pool of responses of respondents as a challenge associated with the non-use of foot-bridge facility in the Niger Delta Region. It was observed that most footbridges within the study area are poorly constructed in terms of inadequate space, broken floor, no handrails, unpaved floor, absence of coverings etc.

Lack of Shelter during Rain



Plate 3: Showing the Presidential/Federal Secretariat foot-bridge, Port Harcourt without covering.

Lack of shelter during rain/Sun was identified as another challenge associated with the use of footbridge facility in the Niger Delta Region by respondents accounting for 40.9% when compared to other challenges. The high level of non-compliance to the use of foot-bridge facility could be attributed to the fact that all the pedestrian foot-bridges in the Niger Delta Region are without shelter, but for the one by NDDC, making pedestrians vulnerable in an event of a rainy or sunny weather, bearing in mind that the Niger Delta Region is located in the heart of the Tropical rain forest where it rains for most months of the year.

Robbery Cases

Further examination of Table 4, revealed that robbery cases is another form of challenge inhibiting the use of foot-bridge as it ranked 4th with a mean value of 2.83. In an interview with one of the respondents by name Ola, he said “I was once robbed at the UNIBEN foot-bridge on my way from lectures to my house as a result of overcrowding, the pick-pocket criminal took my wallet and my

phone in the midst of the crowd since then I don't bother using the foot-bridge as its always crowded".

Absence of Railings



Plate 4: Showing absence of railing on the air force/first bank foot-bridge Port Harcourt

This was seen as another challenge seating on 5th position with a mean of 2.81. Although, few foot-bridges in the study area had hand railings, but they were too old, shaky, rusty, dusty and dangerous to touch as seen in Plate 4

Inadequate Space to Accommodate High Volume of Users

Pedestrians in the Niger Delta region ranked this challenge 6th with a mean score of 2.53 accounting for 36.1%. As it was observed in the study that during the peak period when there is vehicular traffic, the tendency of using the footbridge becomes high, thence as a result of insufficient space to accommodate the influx of individuals, pedestrians prefer to take the risk of running across the road rather than squeezing themselves at foot-bridge locations.

Conclusion and Recommendations

The study concluded that dilapidated structure such as broken floor was a major challenge associated with the poor use of foot-bridge facility in the Niger Delta Region. Hence, the study recommends that:

- Dilapidated footbridges as a matter of urgency needs complete reconstruction, to be attractive to pedestrians to make use of.
- Efforts should be made by the state governments to relocate insane citizens that have turned footbridges into their place of abode into mental or rehabilitation centers. This will give pedestrians the confidence that they won't be attacked by these mentally deranged people.
- Foot-bridges should be made user friendly during its construction. This will include giving it a standard cover to encourage its use during the raining and high sunny days, bearing in mind the wet nature of the Niger Delta Region.
- Constant maintenance culture should be enforced by the government or relevant ministry concerned.
- Refuse collection centers should be placed far from the pedestrian bridges to discourage the practice of dumping refuse at the foot of the steps that gives access to the pedestrian bridges like the case at the pedestrian bridge at St John Port Harcourt.
- The proper lighting of foot-bridges at night should be enforced, to keep hoodlums away from the foot-bridges at night.
- Foot-bridges should be constructed to accommodate pedestrians with disability by addition of ramps to enable wheelchair users to have access to the foot-bridges.
- The location of foot-bridges should be at busy areas with heavy clusters of pedestrians, for example, bus stops, schools, churches, mosques, markets, federal and state secretariat complexes etc.

- The relevant bodies responsible for the construction of foot bridges in the various states of the Niger Delta region should ensure they make the walkway of foot-bridges wider to accommodate nursing mothers pram, disable wheelchair, and pedestrians should also see the act of climbing the foot-bridge to cross the road as a means of exercising their bodies and aiding their heart to function better.

- Yenegoa, the capital city of Bayelsa State is in dire need of pedestrian foot-bridge as Opolo market days (Thursdays) in the city causes heavy traffic jam due to high pedestrian traffic, same traffic is witnessed around Okaka Community Primary school where a market (which buys on Tuesdays) is also located. Same traffic is observed at Suwali market. The construction of pedestrian bridges at these busy centers will help protect the lives of children, and other pedestrians.

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