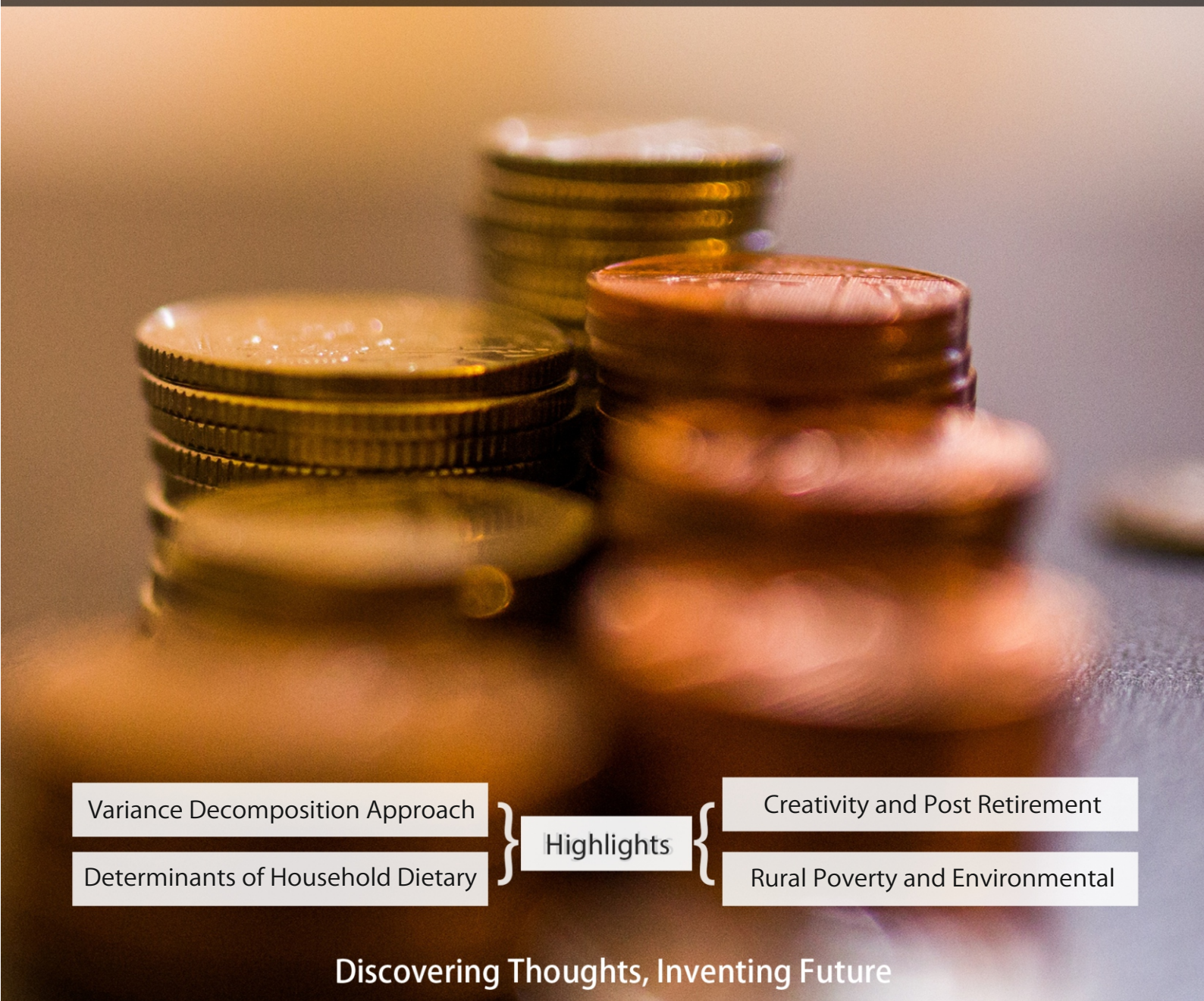
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Highlights

- Variance Decomposition Approach
- Determinants of Household Dietary
- Creativity and Post Retirement
- Rural Poverty and Environmental

Discovering Thoughts, Inventing Future

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Capital Market Predictive Power on the Development of the Nigerian Economy: An Impulse Response and Variance Decomposition Approach

By Ihezukwu, V. A. & Uche Emmanuel
Abia State University

Abstract- The study investigates the contributions of Nigeria's capital market to the development of Nigeria economy. Most researchers focused on the capital market and growth nexus, while we deviated by focusing on the role played by the capital market in ensuring the reduction of unemployment and poverty in Nigeria. Specifically, we investigated the contributions of market capitalization (MCAP), the value of share traded (VST), and all share index (ASI) to the unemployment rate (UNPR) and poverty (NPI) reductions in Nigeria within the period 1981 to 2017. The data series used was obtained from the annual statistical bulletin of the central bank of Nigeria (CBN) and Nigeria stock exchange (NSE). Preliminary analyses of stationarity and cointegration tests revealed that the series was non stationary at levels, and cointegrated, respectively.

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Capital Market Predictive Power on the Development of the Nigerian Economy: An Impulse Response and Variance Decomposition Approach

Ihezukwu, V. A. [α] & Uche Emmanuel [σ]

Abstract- The study investigates the contributions of Nigeria's capital market to the development of Nigeria economy. Most researchers focused on the capital market and growth nexus, while we deviated by focusing on the role played by the capital market in ensuring the reduction of unemployment and poverty in Nigeria. Specifically, we investigated the contributions of market capitalization (MCAP), the value of share traded (VST), and all share index (ASI) to the unemployment rate (UNPR) and poverty (NPI) reductions in Nigeria within the period 1981 to 2017. The data series used was obtained from the annual statistical bulletin of the central bank of Nigeria (CBN) and Nigeria stock exchange (NSE). Preliminary analyses of stationarity and cointegration tests revealed that the series was non stationary at levels, and cointegrated, respectively. The result of the impulse response functions (IRF) and variance decompositions from the two models considered revealed that the contributions of the capital market to poverty reduction in Nigeria is highly insignificant, while it contributes marginally to unemployment reductions in Nigeria within the study period. Conclusively, the research reveals that the Nigeria capital market is not contributing optimally to the development of Nigeria's economy as this is evident in its abysmal contributions to poverty and unemployment reductions. In line with the findings of this work, we recommend that the Nigeria capital market is repositioned in a way that it can optimally contribute to the reduction of unemployment and poverty in Nigeria.

Keywords: capital market, sustainable development, impulse response function, variancede composition.

I. Introduction

a) General background

The importance of the Capital market on the overall development of the Nigerian economy cannot be neglected. This is because the capital market in the recent past had played major roles as an institution that contributes significantly to the socio-economic growth and development of many economies (Bassey, 2009).A growing economy is said to experience development in areas of employment and poverty levels when factors that accelerate growth are recognized. The availability of fund as one of such economic factors for investment is acknowledged. Though commercial banks are expected to provide necessary funds for private investors, yet it is only for short terms periods. Investors, therefore need an institution that will provide funds for long periods for which banks are incapable of undertaking.

Hence, the capital market is a market for long term securities, including the stock and the bonds market. The Capital market provides funds which enable government and firms to raise long-term capital for financing new projects or expanding and modernizing industrial concern. It is therefore, an economic institution that promotes efficiency in capital formation and allocation since funds are taken from surplus economic units to deficit units for investment purposes (Osaze, 2007).Suffice it to say that if funds are not provided to those productive units, the rate of expansion of the economy will lag; this is because it is the capital resource gap that leads to external borrowing (Okpara, 2012).

The Capital market in Nigeria is classified into two; primary and secondary markets. The primary market being a market for trading newly issued securities while the Secondary markets trade on old or already existing securities. Major institutions involved in the capital market are; the Securities and Exchange Commission (SEC) as a regulatory body, the Nigerian Stock Exchange, Brokerage houses, Issuing houses, Unit trusts, etc. The growth and development of the Nigerian capital market could be traced back to late 1950s when the Federal Government, through its ministry of industries, set up the Babcock Committee, saddled with the responsibilities of setting up modalities for the establishment of a stock market in Nigeria. Before independence, financial operators in Nigeria were mainly foreign-owned commercial banks that provided short-term commercial trade credits for the operations of the multinational organizations that had their outlets in Nigeria (Nwankwo, 1991).

The Nigerian government, in a bid to accelerate economic growth, embarked on the development of the Nigeria Capital market which was meant to provide local opportunities for borrowing and lending of long-term

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capital by the public and private sectors, not excluding foreign-based organizations that offer their shares to the local investors and provide avenues for the multinationals to invest their surplus funds (Bassey, Ewah and Essang, 2009).Based on the report of the Babcock Committee, the Nigerian government set up the Lagos Stock Exchange in 1959, and it was backed by the subsequent enactment of the Lagos Stock Exchange Act of 1961. It commenced business in June 1961 and resumed the expected activities of the stock market as it provides necessary facilities for the public to trade in shares and stocks, while it maintain fair prices for all participants through stock-jobbing and other related activities, and such was restricted strictly to its members (Nemedia, 1982).

In 1977, the Lagos Stock Exchange was renamed the Nigerian Stock Exchange charged with the objectives of providing facilities to the Nigerian public for the purchase and sale of funds, stocks, and shares of any kind and for an investment of money, among others. According to the Memorandum and Articles of Association, the Exchange was incorporated as a private non-profit organization limited by guarantee to undertake the functions of providing trading facilities for dealing in securities listed on it, among others. Initially, the Nigeria Stock Exchange began trading activities with the floating of two development stocks, one preference share and three domestic equities offered by the federal government. The market witnessed slow growth during this period as only six equity stocks were traded at the end of 1966. This was an improvement when compared with only three sold at the end of trade in 1961. The bulk of the listening in the market were mainly government securities as about nineteen was quoted in 1966, compared with only six traded in 1961.

Before 1972, when the indigenization policy took off, activities on the Nigerian Stock Exchange were at its lowest level, and this was witnessed in the volume of transactions and value of trade. For instance, the levels of activities grew from ₦1.49 million in 1961 to ₦16.6 million in 1971. Similarly, transactions grew from 33 to 634 over the same period. Although the bulk of trading activities were in the government securities, which were mainly development loan stock through which the government raised money for the execution of its development plans (NSE Fact Book, 2002).In this regard, the Nigerian Enterprises Promotion Decree of 1972 was promulgated and implemented with a principal objective of promoting capital formation, savings and investment in the industrial, commercial and other related activities of the country. The low level of transactions in the stock market maintained an upward trend as Nigerians gained the commanding heights and active participation in the economy.

On the other hand, following criticisms that the Nigerian Stock Exchange was not responsive to the needs of local investors, especially indigenous participants who wished to raise capital for their businesses, the NSE, introduced the Second-tier Securities Market (SSM) in 1985 to provide the framework for the listing of small and medium-sized Nigerian companies on the exchange. Six companies were on the list of the segment of the stock market by 1988, and by 2002, more than twenty-three companies indicated interest and were subsequently listed in the market (Odoko, 2004). A fundamental question concerning stock markets is their efficiencies; the three forms of market efficiency described in the financial markets are; allocative, operations, and information efficiencies. However, Mushinov (2004), noted that a stock market with higher informational efficiency is more likely to retain operational and allocation efficiencies.

A market is regarded as being efficient with regards to a set of information if it becomes impossible to make economic profits by trading based on this information set. The term efficiency refers to broad availability of information on past stock prices to the general public and in turn, stock, how price movements respond to the information in a timely and accurate manner. Capital market efficiency therefore, suggests that stock prices incorporate all relevant information on past stock prices when that information is readily available and widely disseminated such that there is no systematic way to exploit trading opportunities and acquire excess profit. In other words, no arbitrage opportunities can be tapped using ex-ante information as all the available information has been discounted in the current prices (Magnus, 2008).

b) Motivation

The Capital market is a market that provides efficiency in capital formation and allocation, is expected to accelerate economic growth and development. Hence, for the capital market to have an impact on the development of the economy, it must operate efficiently. This, no doubt, generates confidence in the minds of the public and investors who are ready to trade with their hard-earned money and invest them in securities with the hope that in future, they would recoup their investment (Ewah, *et al,* 2009). If the market shows much volatile and speculative tendencies, investors will be unwilling to participate actively for the fear of overwhelming financial loses. The detrimental effect on the economy is that investors will refuse to invest in financial assets; hence, companies cannot raise additional capital for expansion. This will invariably hinder savings, and when savings are low, it will result in poor investment, and by way of cyclical effects, the unemployment rate would be on the increase vis-a-vis the poverty level.

Suffice it to say that he capital market since its inception on 15th September 1960 has had its shares of ups and downs. Empirical evidence from Olowe and Oludoni (2002) indicate that the capital market is

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imperfect as distortions noted in the market ranged from barring foreign investors from entering the market, regulating interest rate, imposing price caps on share price movements, political instability. All these resulted in general low performance of the capital market such that the repercussion effect is low market capitalization, low turnover, thinness in trading, significant abnormal returns, and illiquidity of the market.

Adelegan and Ariyo (2008) noted that information is not instantaneously and simultaneously available to all investors; hence, the existence of unequal access of firms to the capital market in Nigeria. Onwumere (2007) observed that limited instruments such as equity and bonds were traded in the Nigerian capital market due to the underdeveloped nature of the market. Okpara (2010) noted that ignorance on the part of most Nigerians coupled with low income and high marginal propensity to consume account for their strong desires to hold cash balances for transactions and precautionary rather than speculative motives. Such activities seem not only distorts interactions between information and prices of stock but also limited the mobilization of funds for development purposes and thus affects the liquidity of the capital market.

These anomalies, imperfections, and distortions inferred from the above assertions cast doubt on whether the trend in the Nigerian stock market can predict the economy and possibly lead to a reduction in unemployment and poverty level in Nigeria. However, some policy measures have been put in place over the years to checkmate these distortions in the capital market. For instance, the introduction of the Structural Adjustment Programme (SAP) in 1986 gave birth to the deregulation policy in 1987. This policy was meant to eliminate stringent laws and policies. It is worthy of note that SAP resulted in a positive response from the capital market as there was a tremendous boom. The boom led to a mad rush by most Nigerians investing in the capital market. Suffice it to say that the national income heightened as the GDP growth rate increased from 5.2% in 1986 to 23.22% in 1987. Though this did not have a commensurate impact on the development of the economy as our indices of study, the unemployment rate increased to 7.0% for 5.3% in 1986, and the poverty rate equally increased to 47.3% from 46.3% in 1986 (CBN, 2016).

Meanwhile, it was as a result of the deregulation exercise that the government sold its shares in many firms while privatizing and commercializing many of its parastatals in 1988. This increased private investment, and the GDP growth rate responded with an increment from 23.22% to 28.42% in 1988. Suffice it to say that the growth in the national income succeeded in reducing the unemployment rate still to 5.1% from 7.0% in 1986 while the poverty rate only increased by 1%.More so, the recapitalization exercise of banking and insurance industries in 2004 increased the number of securities in the stock market and at the same time, created a satisfactory public awareness and confidence in the stock market. This exercise, no doubt, increased market capitalization, which resulted in an enormous increase in the GDP growth rate to 30.22% from 17.38% in 2003. Suffice it to say that there was an insignificant impact of this growth on unemployment and poverty rates, as the former reduced by only 3% while the latter recorded a 0.2% reduction (CBN,2016).

Thus, the point of departure of this study is to relate the capital market to economic development, knowing that as national income increases, the expectation is that development indices such as unemployment and poverty levels reduce drastically. It is, in the light of this assert that the researchers are spurred into action, to fill this yawning research gap through variance decomposition and impulse response techniques which most researchers have not used in their capital market analysis. We therefore, ask the following research questions.

1. To what extent does market capitalization, all share index, and value of shares traded influence the poverty index in Nigeria?
2. Do market capitalization, all share index, and value of shares traded have an impact on the rate of unemployment in Nigeria?
3. What is the direction of the causal relationship between stock market indicators and economic development in Nigeria?

The current work will be guided by the following objectives; to x-ray the underlisted and consequently give empirical evidence on the following research hypotheses; viz: determine whether market capitalization, all share index and value of shares traded impact on unemployment level in Nigeria, ascertain if the capital market, all share index and value of shares traded influence the poverty level in Nigeria, and access the direction of causal relationship between the capital market and economic development indices in Nigeria.

Hypotheses:

H_{01}: There is no significant relationship between the capital market indices and the rate of unemployment.
H_{02}: Poverty index is not related to the capitals market
H_{03}: There is no causal relationship between the capital market and economic development.

II. Review of Related Literature

a) Theoretical Literature

i. Random-Walk Hypothesis

The theory behind the capital market efficiency and Economic development was made popular by a French mathematician and stock analyst Bachelier (1900). He convincingly stated that commodity speculation in France was a “fair game” where neither the buyers nor the sellers could expect to make a profit,

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hence past returns were independent of present or future returns.

Samuelson and Costner (1964) modified his work and likened it to a proverbial drunkard who, in his inebriated state, takes a step forward and a step backward. They opined that Random Walk Principles suggests that stock prices change randomly and this made prediction impossible.

Fama (1965) reviewed and presented the assertion formerly by categorizing the principles of efficient market hypothesis with some underlying assumptions.

ii. *Efficient Market Hypotheses*

The efficient market hypothesis implies that price adjustments are independent and random. Hence, a securities price at any point in time is an unbraided estimate of the real intrinsic value of the security at then. The three major forms of market efficiencies are:

(a) *Weak-Form Efficiency*

Okpara (2011) maintains that a market is efficient in the weak form when current security prices reflect all relevant information contained in its record. The fact that the value of a stock has risen for the past two or three days will give no useful information as to what today or tomorrow's price will be.

(b) *Semi-Strong Form Efficiency*

Semi-strong contends that the worth of any security reflects the only the past price of the stock but also all available public information (Information about the economy, political issues, news, company's financial statements). It reflects all publicly known information but does not consider private information or insider dealings.

(c) *Strong Form Efficiency*

This assertion contends that current market price instantaneously and fully reflects all pertinent information, including everything that is known and knowable, whether public or private. The theory encompasses both the weak and the strong forms of efficiencies.

b) Empirical Literature

The link between capital market efficiency and the development of the emerging economies has attracted empirical investigations by many researchers both Nigeria and other countries.

Ewah*et al.* (2009) evaluated the effects of the capital market efficiency on the growth of the Nigerian economy using a time series data from 1961-2004 analyzed with multiple regression and OLS technique and found out that the Nigerian capital market has the potential of growth-inducing but a minimal influence on the economic growth.

Adan and Sanni (2005) examined the role of the stock market on the Nigerian economic growth using granger causality and regression analysis and discovered one-way casualty between GDP growth and market capitalization and a two-way causality between GDP growth and market turnover ratio.

Osinobi and Amaghi (2003) examined the relationship between the Nigeria stock market and economic growth using data spanning 1980 to 2000. Applying the OLS method, found out a positive link between the stock market and economic growth.

Kehinde et al (2013) analyzed the impact of the capital market on economic growth in Nigeria using annual data between 1981 to 2010 and applying OLS and Vector Auto-regressive techniques found out that there exists a positive and long-run relationship between the capital market indicators used and the Real Gross Domestic Product.

Emenuga (1998) examined and analyzed the Nigerian stock market on the growth of the economy using a time series data from 1980 to 1995, applying unit root test and autocorrelation found out that the Nigerian capital market is illiquid.

Akingugbe (2005) analyzed the weak form efficiency of the Botswana stock market with data from 1990 to 2002, applying autocorrelation and augmented Dickey-Fuller test found out that there is evidence of weak and semi-strong form efficiencies.

Okpara (2011) analyzed the efficiency and predictive power of the Nigerian stock exchange with data from 1984 to 2009 applying the GARCH model and found out that there is evidence that the stock market in Nigeria is efficient and it equally follows a random walk.

Nwaolisa, Kasie, and Egbunike (2013) examined the impact of the capital market on the growth of the Nigerian economy under the Democratic Rule. Applying the multivariate regression method observed that MCAP and ASI positively influence GDP while VST has a negative effect.

Chinweuba and Amos (2011) examined the impact of the Nigerian Capital Market performance on economic development using the OLS model and observed that capital market impacts positively on the economic growth of Nigeria.

Smith and Ryoo (2003) examined stock market efficiency in the emerging markets in Greece, applying the Variance Ratio test found out that there is no evidence of efficient market hypothesis.

Ariyo and Adelegan (2005) are of the opinion that the liberalization of the financial market contributes to the growth of the Nigerian capital market, but then, its impact on the economy is insignificant.

Appiah (2003) employed the E-GARCH model and a logistic map to test the efficiency of the African Stock market; results particularly recognized the Nigerian stock market as not weak-form efficient.

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III. Methodology

The study adopts the Random walk theory propounded by Samuelson (1964) and reviewed by Fama (1970) Efficient Market Hypothesis (EMH). The theory emphasized that the stock market leads economic activities, and it ensures the availability of current information and the existing prices of stocks. The operational methodology adopted is the Unit Root test, co-integration tests, Vector Error Correction Model, Variance Decomposition, Impulse Response, Stability and Autocorrelation test. The scores of tests are to avoid spurious result which could lead to a wrong conclusion. A time-series of data from 1985 to 2017 was obtained from the CBN Statistical Bulletin.

a) Model Specification

For the capital market to contribute to the development of the economy, it must operate efficiently. Most often, where the capital market operates efficiently, confidence would be generated in the minds of the public and investors would be willing to part with their hard-earned fund which they will invest with the expectations of future returns. The increase in investors' confidence would motivate them to re-invest in securities, which invariably maximizes shareholders' wealth and cause a reduction in poverty level. Secondly, the capital in its numerous roles enables companies to raise extra finance that is essential for expansion. Thus, this expansion of industrial activities increases the marginal product of labor which would cause employment rate to equally be on the increase and invariably reduce the unemployment rate. By way of cyclical effect, more people would be gainfully employed and then move out of the poverty level. Hence, the functional forms of our econometric model is as follows:

Model One

$$Y = F(X_1\ X_2\ X_3) \text{------equation(1)}$$

Where Y is the economic development index and is the dependent variable X_1 to X_3 represents capital market indices and are the independent variable. F represents the functional notation specifically stated;

$$NPI = F(MCAP, ASI, VST) \text{-------equation (2)}$$

$$Y = \alpha_0 + \alpha_1X_1 + \alpha_2X_2 + \alpha_3X_3 + u \text{--------(3)}$$

$$NPI = \alpha_0 + \alpha_1\ MCAPR + \alpha_2\ ASI + \alpha_3VST + u \text{------(4)}$$

Where

NPI = National Poverty Index
MCAPR = Market Capitalization Ratio
ASI = All Share Index
VST = Value of Shares Traded
α_0 = Constant term
U = Stochastic Variable

Transforming equations 4 to the national logarithm

$$PI = \alpha0 + \alpha1\ \log\ MCAPR + \alpha2\ logASI + \alpha3\ logVST + u \text{...(5)}$$

Model Two

$$UNPR = F(MCAPR, ASI, VST) \text{-----equation (1)}$$

$$Y = \alpha_0 + \alpha_1X_1 + \alpha_2X_2 + \alpha_3X_3 + u \text{……(2)}$$

$$UNPR = \alpha_0 + \alpha_1\ MCAPR + \alpha_2\ ASI + \alpha_3VST + u \text{…(3)}$$

Where

UNPR = Unemployment Rate
MCAPR = Market Capitalization Ratio
ASI = All Shares Index
VST = Value of Shares Traded
A_0 = Constant term
U = Stochastic Variable

Transforming equations 3 to the natural logarithm.

$$UNPR = \alpha_0 + \alpha_1\ Log\ MCAPR + \alpha_2\ Log\ ASI + \alpha_3\ log\ VST + u$$

To give clearer explanations the understanding and the interactions that exists between the variable, the VECM variance decomposition was adopted in both models. The VAR and VECM were developed by Sims in 1980, and it considers all the variables in the system as endogenous. The variance decomposition was introduced to trace the relative contributions of each variable in explaining the variability that occurs in each of the endogenous factors.

IV. Method of Data Analysis

In line with the aforementioned operational methodology proposed in the previous chapter, the time series data used for empirical probation were first

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subjected to stationarity tests to ensure that the results after that are appropriate for policy moderations. Subsequent upon that, the series was checked for cointegration test in order to ascertain a possible long-run trend among them.

The outcome of the above-mentioned preliminary analysis informed the choice of adoption of the Vector Error Correction Model (VECM) and by extension, the Variance Decomposition and Impulse Response Function, which shows the extent (percentage to which the variations in the dependent variable was brought about by the independent variables. As a follow up to the Variance Decomposition test, the VEC Granger Causality/Block Exogeneity Wald test was applied to check the cause and effect dynamics of the series.

a) The Stationarity/Unit Root Test Results

Table 1: ADF Unit Root Test

Variable	Deterministic trend	Lag	t-statistic	Critical Value 5%	Remarks
NPI	C	1	-6.252223	-2.945842	Stationary
UNPR	C	1	-5797366	-2.945842	Stationary
LoG MCAP	C	1	-4.574041	-2.945842	Stationary
LoG ASI	C	1	-4.128281	-2.957110	Stationary
LoG VST	C	1	-5.358556	-2.945842	Stationary

Table 2: Kwiatkowski – Philips – Schmidt – Shin (KPSS) Unit Root Test

Variable	Deterministic trend	Lag	t-statistic	Critical Value 5%	Remarks
NPI	C	1	0.163538	0.463000	Stationary
UNPR	C	1	0.179573	0.463000	Stationary
Log MCAP	C	1	0.174069	0.463000	Stationary
Log ASI	C	1	0.415168	0.463000	Stationary
Log VST	C	1	0.172026	0.463000	Stationary

A look at the results in tables one and two (1and2) above shows that the series were non stationary in their level forms, but after differencing once, stationarity achieved, thereby they are all integrated of order-one I(1), and this being the case, we proceeded to test the possibility of the existence of a long-run relationship among the variables.

Having ascertained stationarity, we applied the Johansen method of cointegration test as such is amenable to time-series data that exhibited such characteristics.

b) The Longrun/Cointegration Test

Table 3A: The Johansen Cointegration Test (model) (1)

Cointegration Test: Unrestricted Cointegration Rank Tests: Trace-Test & Maximum Eigenvalue
Series: UNPR LOG (MCAP) LOG (VST) LOG (ASI)

Hypothesized No. of CE(s)	Eigen values	Trace Statistic	5% Crit.	Prob.	Max-Eigen Statistic	5% Crit.	Prob.
None*	0.530216	45.84602	40.17493	0.0121	24.17545	24.15921	0.0498
At most 1	0.335945	21.67057	24.27596	0.1029	13.10051	17.79730	0.2214
At most 2	0.171798	8.570064	12.32090	0.1958	6.031960	11.22480	0.3461
At most 3	0.076252	2.538104	4.129906	0.1313	2.538104	4.129906	0.1313

* denotes rejection of null hypotheses of no cointegration at a 5% significance level.

Table 3b: The Johansen Cointegration Test (model 2)

Cointegration Test: Unrestricted Cointegration Rank Tests: Trace-Test & Maximum Eigenvalue
Series: NPI LOG (MCAP) LOG(VST) LOG(ASI)

Hypothesized No. of CE(s)	Eigen values	Trace Statistic	5% Crit.	Prob.	Max-Eigen Statistic	5% Crit.	Prob.
None*	0.600888	48.41207	47.85613	0.0443	29.39245	27.58434	0.0290
At most 1	0.250908	19.01963	29.79707	0.4915	9.244580	21.13162	0.8122
At most 2	0.191987	9.775048	15.49471	0.2984	6.821673	14.26460	0.5104
At most 3	0.088162	2.953375	3.841466	0.0857	2.953375	3.841466	0.0857

* denotes rejection of null hypotheses of no cointegration at a 5% significance level.

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The empirical evidence emanating from Johansen Cointegration tests in tables 3a and 3b for models one and two respectively reveal that the data series share a common trend among them in the long run. That is, the variables in both models are cointegrated. More technically, both the trace test statistic and the maximum-eigen value tests show the prevalence of one cointegrating vector among the series in the two models as adopted and based on the 0.05(5%) level of significance critical value.

c) The VECM and Variance Decomposition Results

The results of the long-run test above indicate that our data series are cointegrated. The prevalence of such conditions informed our choice for the adoption of the Vector Error Correction Model and by extension, the Variance Decomposition Analysis and Impulse Response Function to check the predictive power of the capital market variance on some chosen developmental variables in Nigeria.

Lag Order Selection Criteria

Before delving into further analysis, the models were subjected to lag order selection with different information criteria. The Final Prediction Error (EPE), Schwarz information (SC), the Hannan-Quinn Information (HQ) lag order selection criteria indicate the most preferred lag length of 1. The Akaike information indicates a lag length of 4.

Table 4: Optimal Lag Test Output

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-198.8314	NA	8.764305	13.52210	13.70892	13.58186
1	-53.14713	242.8072*	0.001561*	4.876475	5.810607*	5.175312*
2	-43.57092	13.40668	0.002553	5.304728	6.986165	5.842634
3	-31.23307	13.98290	0.003859	5.548872	7.977614	6.325847
4	-2.352440	25.02988	0.002349	4.690163*	7.866210	5.706208

* indicates lag order selected by the criterion

Based on the fact that out of four options adopted, three out of it chose lag length order of 1 while only one indicates four as the appropriate lag length, we, therefore, accept the lag length of one as the most preferred. The chosen lag length and its outcomes applies to models one and two as their various information criteria chose lag order one as the appropriate lag length.

Model two

The Variance Decomposition and IRF of model 2:

Table 5: Variance Decomposition and Impulse Responses of National Poverty Index (NPI) to Capital Market Variables

Variance Decomposition of NPI:					
Period	S.E.	NPI	LOG(MCAP)	LOG(VST)	LOG(ASI)
1	3.205698	100.0000	0.000000	0.000000	0.000000
2	4.368898	96.58939	1.324529	1.493477	0.592599
3	5.294328	93.26117	1.898704	2.760425	2.079697
4	6.050832	90.37080	2.484654	3.665481	3.479066
5	6.714574	87.99038	3.046748	4.343920	4.618955

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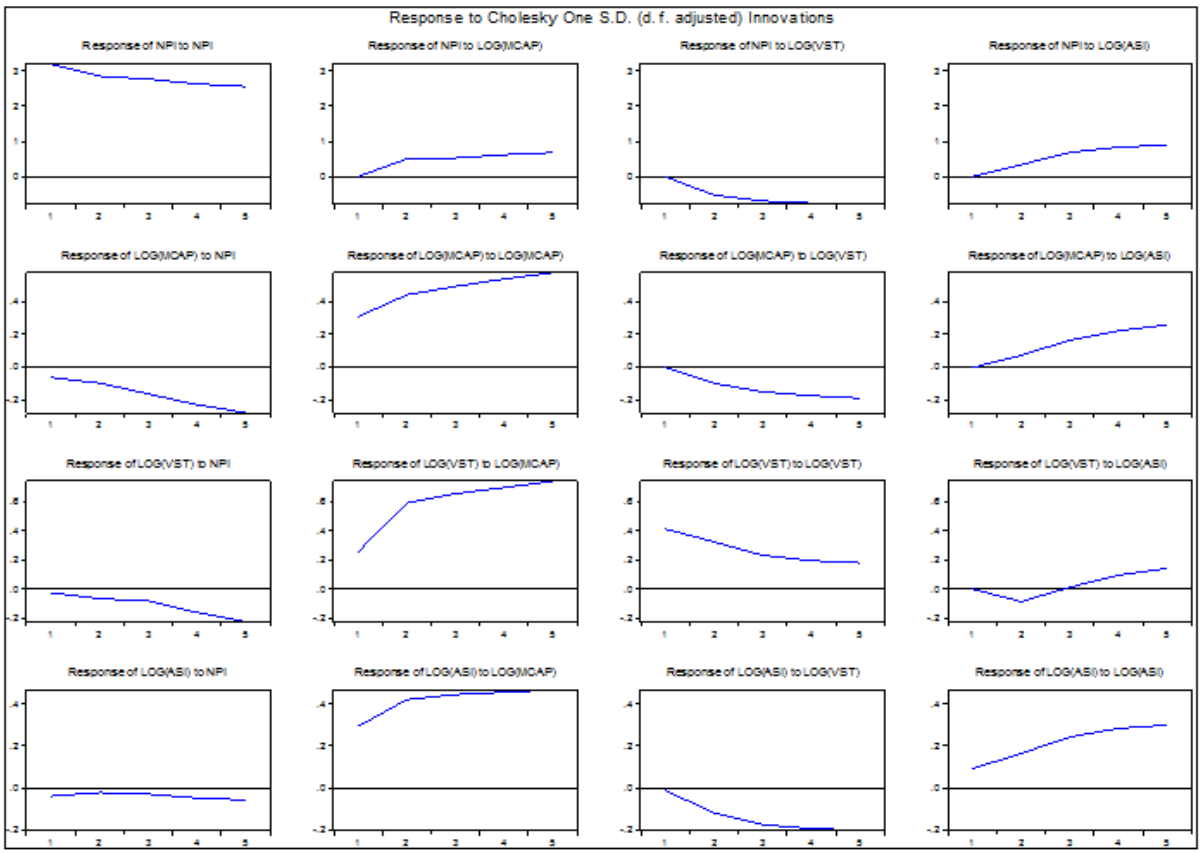


Fig. 1: Impulse Response Function of NPI and Capital market instruments

The variance decomposition of NPI presented in table 5 above reveals that 100 percent NPI variance can be explained by itself in the first period and continued in that same direction till the tenth period with a marginal difference as it stood at 94%. The capital market instruments collectively do not explain any variation of the NPI in the first period, however, they generally determined only 5.2% of changes in the NPI. These demonstrate that the contributions of the capital market to poverty reduction in Nigeria are highly insignificant.

To give further explanations, the variance decomposition and the Impulse Response Function (IRF) were employed. Figure 1 above depicts the outcomes of the IRF of NPI and capital market variables. The IRF demonstrates and further proof that the response of NPI to the capital market in Nigeria is highly insignificant, and this gives further justification to the VD results. The reaction of NPI to MCAP is positive from the first period till the third period. However, it turns negative from the fourth period till the tenth period. The response of NPI to both VST and ASI remained negative from the first period to the tenth period.

The results from the Variance Decomposition and the IRF clearly demonstrate that the contributions of the capital market in Nigeria to poverty reduction is highly insignificant, thus funds are in tandem with the revelations of Ewah, Bassey and Esang (2009), Emenuga (1998), Nwaolisa (2013), Ariyo and Adelegan (2015), Appiah (2003). Conversely, the revelations contradict the works of Chinweuba and Amos (2011), Kehinde (2013).

Model two

The Variance Decomposition and IRF of model 2:

Table 6: Variance Decomposition and Impulse Responses of Unemployment Rate (UNPR) to Capital Market Variables

Variance Decomposition of UNPR:					
Period	S.E.	UNPR	LOG(MCAP)	LOG(VST)	LOG(ASI)
1	2.520397	100.0000	0.000000	0.000000	0.000000
2	3.705849	80.10207	18.03889	0.956085	0.902951
3	4.439571	71.61123	20.78746	5.409825	2.191487
4	4.871430	70.98496	17.96159	7.630176	3.423280
5	5.159814	71.04959	16.08924	8.464362	4.396807

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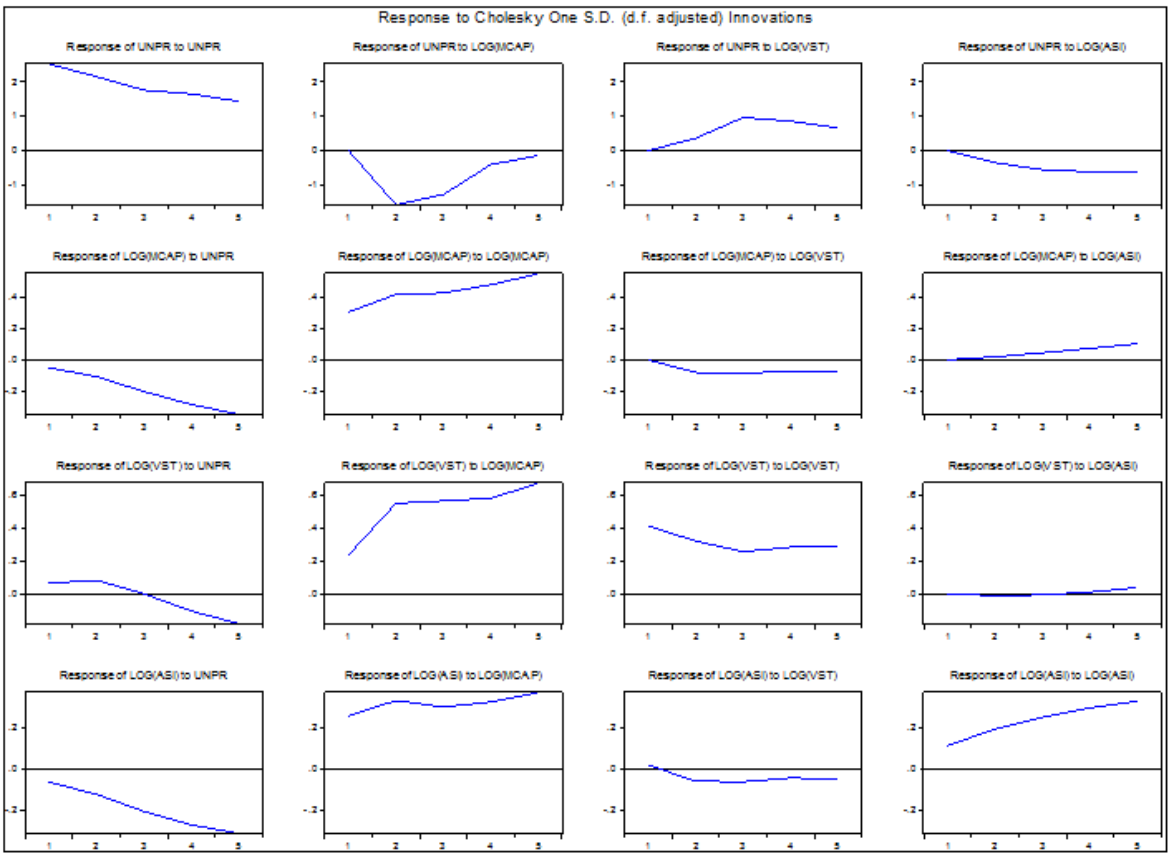


Fig. 2: Impulse Responses Function (IRF) of unemployment rates to the capital market in Nigeria

The variance decomposition of UNPR, as presented in the table above, reveals that 100% of the variations in the unemployment rate were explained by itself in the first period. The changes in UNPR that were brought by itself reduce gradually as it reduces to 43% in the tenth period. The capital market factors contributed 8% to the variance of the unemployment rate in the first period; however, with time, they collectively contributed 56.04% to the variance of the unemployment rate.

Individually, the value of shares traded (VST) has the highest contribution (31.98%) to the variance of unemployment while the value of shares traded (VST) and All Share Index (ASI) contributed 20.41% and 3.65% respectively to the changes of the unemployment rate at the tenth period. In the tenth period, the capital market variable contributed significantly to the variations of the unemployment rate in Nigeria; that is, they contribute about 56.04% to the reduction of unemployment rate in Nigeria within the period under review.

The Impulse Response Function of the unemployment rate and Capital Market Variables presented in figure 2 above to give further explanation to the result obtained from the variance decomposition. The response of UNPR to MCAP is negative in the first and second period; afterward, it turns positive from the third period till the last period of analysis (tenth period). The response of UNPR to VST and ASI is positive from the first period to the tenth period. Its response to VST attained its highest point in the third period, then a slight reduction in period four, and it remained stable within that range till the tenth period. The Capital Market Variables contributions to the unemployment rate in Nigeria are more significant compared to poverty reductions, as this is demonstrated in the results emanating from both the variance decomposition and the Impulse Response function. The findings correspond with the works of Adam and Sanni (2005), Osinubi and Amaghi (2003), Okpara (2011).

d) Diagnostic/VAR Stability Tests Model One/Two

The diagnostic test and VAR stability tests were carried out to ensure that the model is a stable one and devoid of Serial Correlation as the availability of such would render the results of the Variance Decomposition and the Impulse Response Function invalid and inappropriate for policy moderations. Secondly, the autocorrelation diagnosis would reveal the efficiency or inefficiency nature of the capital market.

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Table 7: The VEC Residual Portmanteau Test for Autocorrelations and VEC Residual Serial Correlation LM Test

Lag	LRE stat	Df	Prob	Rao F-stat	Df	Prob
1	7.926	16	0.9510	0.471652	16,617	0.9517

Lag	Q-stat	Prob*	Adj Qstat	Prob*	Df
1	3.314637	-	3.421560	-	-
2	17.54540	0.9370	18.60104	0.9100	28

The results in table 7 above obtained from the VEC Residual Serial Correlation LM test and that of the VEC Residual Portmanteau autocorrelation test nullifies the null hypothesis and prove that the residuals are not serially correlated, that is there is no autocorrelation, or there is absence of serial correlation in the models. However, in an efficient market, the null hypothesis of zero autocorrelation prevails. Therefore, the evidence above shows that the Nigerian Capital Market is weak-form efficient and follows a random walk.

VAR Stability Test

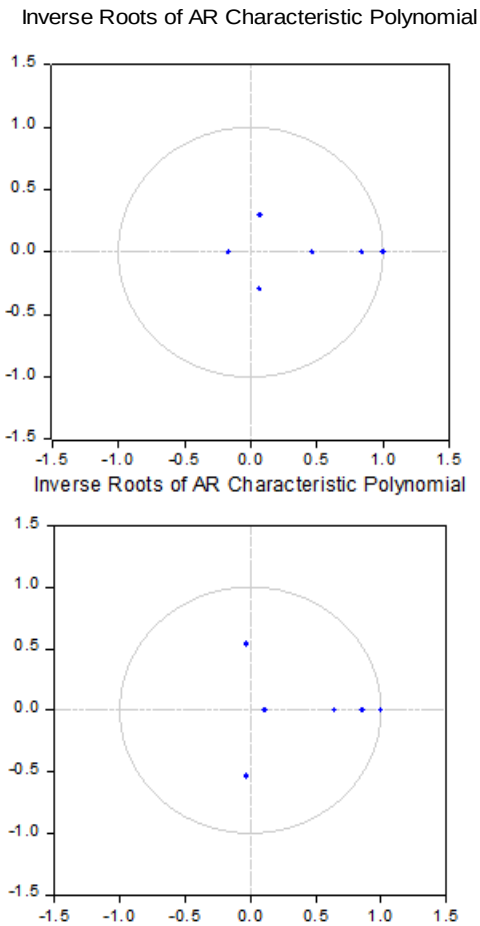


Fig. 5: Inverse Roots of AR characteristics Polynomial for models One and Two

To check for stability of the model, we applied the VAR inverse roots AR characteristic polynomial. According to Gujarati (2003), the VAR model is stable when all the modulus of its roots are less than one. In line with the VAR system tested for the two models, we can conclude that the VEC estimation for the VD and IRF analysis is stable on its optimal lag length.

V. Conclusion and Policy Recommendations

The study examined the transmission of capital market efficiency on the development of the Nigeria economy. The capital market was proxied by market capitalization ratio, All-Share Index and Value of shares traded, while economic progress was proxied by the unemployment rate and poverty rate.

The ADF unit root was adopted to test the level of integration of the variables, and all the variables attained stationarity. The series was checked for cointegration, and long-run relationship obtained among the variables. The outcome of this relationship informed our decision to analyze the series with VECM and by extension, the Variance Decomposition and Impulse response models. As a follow up to the above test, we employed the VEC Granger Causality/Block Erogeneity Wald test in to confirm the cause and effects dynamics of the series.

The results emanating from the above reveal that the capital market variables' contributions to the unemployment rate in Nigeria are more significant compared to poverty reduction.

Recommendations

(i) The government should intensify efforts that are directed towards efficient capital market development as this would restore confidence in the minds of investors and invariably enhance mobilization of funds for long term investment firms. Definitely, this would go a long way in engendering employment through job creation.

(ii) In the quest to reduce poverty rate, the regulators of the capital market should embark on adequate sensitization to the general public by offering services that are affordable to low-income earners to boost entrepreneurship in small and medium scale.

(iii) The regulatory bodies should ensure that information is disseminated speedily and accurately with utmost transparency. This is achievable by making sure that firms listed on the stock exchange publish quarterly or even semi-annual reports in

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addition to the usual annual information with detailed explanations to prevent insider abuse and ensure efficiency in the market.

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Staff Attitude Analysis Digitalization of Corporate Governance

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Abstract- The transition to digital technologies for collecting and processing information, organizing and providing decision-making procedures, monitoring the implementation of planned and ongoing impacts is becoming a priority trend in the innovative development of modern corporations. The openly declared recognition of their promise is paradoxically combined with internal fears and destructive reactions of management personnel to participate in these processes. This publication presents an analysis, identified during the author's research in a number of corporations, of the steady reactions of personnel to digitalization of management.

Keywords: *attitude, concerns, corporation, personnel, reaction, digitalization.*

GJHSS-E Classification: *FOR Code: 150303*



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Staff Attitude Analysis Digitalization of Corporate Governance

Alexander Raichenko

Abstract- **The transition to digital technologies for collecting and processing information, organizing and providing decision-making procedures, monitoring the implementation of planned and ongoing impacts is becoming a priority trend in the innovative development of modern corporations. The openly declared recognition of their promise is paradoxically combined with internal fears and destructive reactions of management personnel to participate in these processes. This publication presents an analysis, identified during the author's research in a number of corporations, of the steady reactions of personnel to digitalization of management.**

Keywords: attitude, concerns, corporation, personnel, reaction, digitalization.

Introduction

Relevance: The success of most corporate development programs is largely determined by the formation of a constructive attitude of personnel towards ongoing changes. The developed program of their implementation directly depends on whether the staff becomes an active ally, a passive participant or a hidden adversary of the planned changes. Support for the planned transformations is necessary provided by the analysis of their perception by the staff and timely response to emerging contradictions. Finally, the obtained results of the ongoing transformations and consistent work to increase the efficiency of their use should be adequately evaluated not only by experts, but, first of all, by the corporation staff, whose content and working conditions they have a direct impact on. This is due not only to relevance, but, above all, to the continuing relevance of research, evaluation and accounting for the manifestations of the relationship of corporate personnel to the development and implementation of innovative transformation programs.

Methodology: The objectives of the study led to the need to adapt the methods of its implementation, providing not only the obtaining of representative materials, but also the possibility of their adequate determination. This is due to significant differences in the definition, understanding and application of the categorically conceptual apparatus for assessing the positions of the subjects in relation to the problems under consideration. The basis of this adaptation was the process approach, which allows registering the relationships shown by subjects in the course of regular professional activities. This allowed us to formulate the first results on the basis of a meaningful analysis of public speaking, free discussions, open documents and other regular sources of information. These circumstances determine the approaches, decompositions, and aspects of the study conducted by the author, the first results of which are presented in this publication.

Analysis: The strategically-oriented digitalization trend is declaratively supported by most modern corporate management personnel, which completely fits into the key trends of the scientific and technological progress of modern society. A substantial analysis of the officially expressed positions of the interviewed management personnel practically does not reveal doubts about the expediency and prospects of digitalizing decision-making processes [1,125]. At the same time, in private conversations with middle and senior managers, specialists and executives of corporate management personnel, a fairly stable range of fears of "decision-makers" is clearly traced by the content and consequences of the introduction of digital technologies in their area of competence. In its most general and highly formalized form, its main positions are distinguished by the following, most often manifesting, critical fears of leaders (executives):

- The inevitability of adapting leadership logic to digital execution formats;
- Submission of the efficiency of decision-making to the rhythm of digital technology;
- Radical expansion of the range of options for the solution in question;
- The need to justify approvals and opinions of specialists;
- Coercion to consider, evaluate and accept stakeholder influences;
- Reduction of the field of peremptory maneuver of decision-making;
- Difficulties in using digital technologies in the management process;
- The prospect of limiting power and weakening the authority of the leader.

Each of the identified positions requires a special study, a constructive assessment and a corresponding reaction, which are now being developed by the author of the publication. At the same time,

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general trends draw attention to the need to develop appropriate measures to compensate for open and latent opposition to such innovations. A clear confirmation of the manifestation of such trends is increasingly found in the argumentation of managers' fears about digitalization of decision-making links to software problems of automated decision-making systems "Boeing-737-MAX". Substantiated, including by this example, the positions of managers regarding the digitalization of the management process become quite a serious obstacle to the development of programs for the development and implementation of the most innovative solutions. However, this position of managers has a significant impact on the motivation of specialists to actively participate in the development and implementation of the full range of innovative programs.

As the studies conducted by the author showed, the positions of specialists in the management apparatus regarding the digitalization of information processing processes initially differed from the reactions of managers. They were based on a significant expansion of opportunities that open up for specialists in the process of digitalization of management procedures. This is due to the widely and variably manifested interest and active participation of specialists in the development and implementation of innovative management digitalization solutions. An analysis of the composition and content of the positions of specialists in the administrative apparatus that are formed during the preparation and conduct of the management's ifrovization reveals a fairly wide range of the most frequently encountered aspects of critical concerns. The most contrasting and definite in the spectrum of these concerns are such as:

- Tightening of planning and support for the implementation of special functions;
- Linking the rhythms of innovative developments to the pace of digital procedures;
- Static detailing of communications, limiting creative cooperation;
- Excessive regulation of the terms of research and design developments;
- Strict formalization of information, abstracting from approaches and nuances;
- Limitation of the possibilities of intuitive search and correlation of solutions;
- Increased risks of copyright infringement.

It is significant that already in the formulations of the above trends, fears of unreasonable restriction, in the process of implementing digitalization measures, and the creative independence of the professional activity of specialists in the administrative apparatus, are contrasting. Their identification and classification can be quite diverse, which does not change the essence of the impact of the fears they emanate on the effectiveness of the development and implementation of digitalization management programs. Directly, it reflects significant limitations on the productivity of the participation of specialists in the management apparatus in the processes and results of the preparation and conduct of digitalization measures. This understanding must be adequately evaluated and constructively taken into account when developing, adapting and implementing specific digitalization programs for managing real corporations.

At the same time, the specialists of the administrative apparatus, as a whole, perceive the development and implementation of a wide variety of digitalization programs as the most positive and constructive. The studies conducted by the author showed that it is the experts who are not only the first to participate in the work for the first time started and already carried out activities, but also independently initiate directions, tasks, tools for their determination and implementation. In the analysis of such manifestations and the results of their implementation, it becomes apparent that it is the experts who become the most active participants in digitalization programs and directly interested users of their results. All this significantly increases the importance of research and assessment of the identified fears of specialists in the management apparatus and actualizes the need for substantive study and constructive resolution of the contradictions exposed by them.

Fundamentally different fears, as the studies conducted by the author have shown, are manifested in the reaction of the technical executives of the administrative apparatus, without the direct participation of which the implementation of any topical reformation project is complete. In the practice of managing Russian corporations, this influence is of particular importance, figuratively assessed by the destructive role of "... switchman ..." [2, 91], which is unreasonably often singled out when analyzing and assessing the reasons for the failure to fulfill the plan. Meanwhile, without the meaningful and responsible participation of performers, primarily in solving problems of formalizing the composition and content of the functions actually performed by them, it is impossible to ensure the adequacy and quality of the formulation and resolution of programming problems.

Conducted by the author in a survey format, research on the manifestations of the positions of technical executives of the management apparatus of a number of corporations, regarding the development and implementation of digitalization programs, revealed their fears such as:

- Regulation of labor procedures for the performance of official duties;
- Increase in labor intensity by formalization of load regulation;
- Reduction in the number of performers as a result of automation of labor;

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- Expansion of the area of responsibility of performers as a result of redistribution;
- Strengthening disciplinary action based on the results of continuous monitoring;
- Registration of personal participation in the processes and results of the team;
- Increasing the requirements for the training profile and skill level;
- Improving the efficiency and tightening of the effectiveness of monitoring and evaluation.

The initial functional analysis of the composition and content of the identified fears of the executives of the management apparatus clearly shows their real attitude and possible reactions to the planned and ongoing digitalization innovations. Obviously, these estimates must be taken into account initially, and the risks they emanate must be neutralized even at the stage of development and adaptation of corporate management digitalization programs. The analysis in this publication only indicates the composition and content of the identified concerns and the likely reactions of management personnel to the development and implementation of digitalization programs. For meaningful processing and applied use of the results of this analysis, it is necessary to correlate them with the main characteristics and specific features of corporations that have a significant impact on the identification, development and solution of tasks.

The decompositions and analysis of the relationship of managers, specialists and executives of the management apparatus to the processes and results of the development and implementation of digitalization programs that are presented in this publication should, first of all, be projected on the features of their implementation in large, with a total number of more than 10,000 employees, medium ones from 1,000 employees and small corporations with less than 1,000 employees. This classification is given by the author solely by the number of the entire composition and personnel of corporate governance, since it is precisely this, as the studies showed, that becomes the determining factor in the effectiveness of the detected reactions and their consequences. Moreover, the author collects and processes information in corporations that are steadily working in relatively independent sectors of the economy, which was necessary to ensure the transparency of the results and conclusions of studies formulated on their basis.

As a result of processing the materials already obtained by the author, the research has most clearly manifested itself, and the expected constructive reaction of almost all categories of IT management personnel. Alternatively, the destructive reaction of management personnel and, above all, technical executives, large corporations of the industrial sector of the real economy with conservatively outdated technologies also appeared to be expected. A study of the relations of managers, specialists and executives of medium-sized corporations to the processes and results of digitalization of management shows a steady industry correlation, which is largely determined by the level of elaboration and maintenance of relevant programs. Of particular importance in them is the motivation for constructive participation and incentives for the personally achieved results of each employee of the management apparatus. It is also obvious that the development, adaptation and implementation of effective programs for digitalizing the management processes of almost all corporations of any industry initially requires a transparently explained and deterministically designed administrative support for all implementation procedures at each specific workplace.

Findings: In general, the ongoing research and the first received and processed materials clearly showed not only the possibility of identification and the need to take into account the attitude of corporate personnel to digitalization of management processes. They contrastingly outlined and structured the composition and content of the most stable trends in the formation and development of concerns of corporate personnel caused by the implementation of digitalization programs, primarily administrative procedures. Obviously, implementation support and a constructive reaction to feedback should be ahead of innovation processes, and not to catch up with them, which is not uncommon in busy corporations. Including for these purposes, the author considers it necessary to continue the ongoing research, presenting their results to a discussion of an interested audience, which will allow focusing on key aspects of the problems considered.

Recommendations: Particular attention, as shown by the systematization of the analyzed procedures and already processed research results, requires the study and consideration of the manifestations of the radical relations of corporate personnel to the planning and implementation of significant transformations. Timely identification, analysis of the target impact and the development of a meaningful reaction to the trends they reflect largely determine the effectiveness of the final result of the innovation. The author continues to collect and process information revealing the causes, manifestations and characteristics of the radical reactions of corporate personnel to the development and implementation of transformation and innovative development programs. In this direction, the ongoing research allows us to modernize, test and adapt the adequate tools of the methodology [3, 19] for the development, implementation and support of the implementation of innovations by providing constructive support for corporate personnel.

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Creativity and Post Retirement Adjustment of Public Servants in Akwa Ibom State

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Abstract- This study investigated the influence of creativity tendencies on post-retirement adjustment of public servants in Akwa Ibom State of Nigeria. Two hundred and ninety-nine (299) public servants, made up of two hundred and fourteen (214) males and eighty-five (85) females that resided in Akwa Ibom State were involved in the study. A 42 item questionnaire titled Retired Public Servants Opinion Questionnaire (RESPSOQ) was used to elicit information on the retired persons' feelings on creative tendencies and their post-retirement satisfaction of health, social, emotional and economic indices. The questionnaire was pilot tested on one hundred (100) retired persons in two (2) local government areas from two (2) senatorial zones in the state. A null- hypothesis that creative tendencies have no significant influence on post-retirement adjustment of public servants was tested using the analysis of variance (ANOVA) at 0.05 level of significance at 2 and 296 degrees of freedom.

Keywords: creativity, post-retirement, retired public servants, economic indexes, akwa ibom state.

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Creativity and Post Retirement Adjustment of Public Servants in Akwa Ibom State

Dr. Nenty J. Nenty

Abstract- This study investigated the influence of creativity tendencies on post-retirement adjustment of public servants in Akwa Ibom State of Nigeria. Two hundred and ninety-nine (299) public servants, made up of two hundred and fourteen (214) males and eighty-five (85) females that resided in Akwa Ibom State were involved in the study. A 42 item questionnaire titled Retired Public Servants Opinion Questionnaire (RESPSOQ) was used to elicit information on the retired persons' feelings on creative tendencies and their post-retirement satisfaction of health, social, emotional and economic indices. The questionnaire was pilot tested on one hundred (100) retired persons in two (2) local government areas from two (2) senatorial zones in the state. A null-hypothesis that creative tendencies have no significant influence on post-retirement adjustment of public servants was tested using the analysis of variance (ANOVA) at 0.05 level of significance at 2 and 296 degrees of freedom. The result showed that the creative tendencies of retired public servants had a significant influence on their post-retirement emotional and economic adjustment but no significant influence on their post-retirement health and social adjustment. Hence the null hypothesis that there is no significant difference among retired public servants who are high, moderate or low in creative tendencies with regards to their post-retirement adjustment is rejected for emotional and economic indices but upheld for health and social indices at .05 level of significance. Normally being able to create or produce some required item/tools in the home that would need be bought is bound to create some sense of satisfaction or fulfilment which could promote emotional stability and also save some money which for the retired public servant is scarce. Money is an important satisfaction booster for the retired so any method he would apply to save money or have some incoming .revenue will help psychologically. The same does not apply to the health and social aspects. The degree of creative tendencies displayed by the retired does not affect his/her state of health unless of course through the financial angle. The degree of creative tendencies cannot help him/her relate to kith and kins or friends if he/she had not been doing so before. The retiree's health tends to depend more on the availability of resources to maintain themselves and their ability to interact, associate or mingle with people of various sects, age and social standing.

Keywords: creativity, post-retirement, retired public servants, economic indexes, akwa ibom state.

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I. Introduction

People work to earn a living. Working generally encompasses the exertion of energy towards a wide variety of particular ends, while job refers specifically to the position of employment which one holds. One could work for himself in a private capacity or for established organizations - private or government-owned.

It is normal that one should be paid for his work and should stop working at a certain age depending on his type of work and state of health. Self-employed people are not paid, do not expect retirement on fixed conditions, and do not prepare for it. In industrial settings, professionals are work-oriented. A vocation to them is synonymous with their lives. Other things are secondary. Because work is central in their lives, job loss to retirement means leaving one's means and sense of being (Chukuweneke, 1990). Work has some functions and meaning in one working life and these differ according to professions and individuals. Functions and meaning of work have to do with status, income and prestige depending on workplace and qualification. Some jobs attract enough pay to fetch comfortable living, pleasure trips and oversea holidays and saving to engage in business investment in preparation for out of work session, while others do not even pay enough to feed the holder and his family. Some jobs are stable and pensionable while others are temporary and non-pensionable. Jobs that allow for more autonomy, self-directedness, intellectual flexibility and sociability, prepare people better for retirement (Kohn and Scholar, 1993).

Emphasis on the effect or retirement centres on separation from work and the severing of relationship from a job and working colleagues. Though it is threatening, retirement is necessary for ageing workers. With approaching declining health, age-related infirmities, declining productivity corners", retirement regulations or all of these combined, it is as imperative for a worker to retire. And retirement demands satisfying adjustment. Indices of satisfaction for all workers that also apply on retirement worth noting include finance, health, purpose in life, social class, marital bonding and status of the officer and status of retirement-planned, forced or voluntary.

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a) *Explanation of Terms*

Creativity: Creativity can be taken to be the mixing spot of individual's variables (of intellectual style and processes, personality, knowledge and motivation) and environmental variables (of the physical setting, condition of the field of endeavour and cultures). Creativity entails divergent thinking skills and their application in everyday life. It is significant to separate aspect of giftedness. Giftedness is assessed as the innate or inborn capacity of an individual.

Creativity emerges through an interaction of an individual with a culture. Culture channels creativity in providing a set of facilitating and/or inhibiting conditions. The creative process promotes certain forms and domains as creative and regulates the general level of creativity. Creative tendency is the disposition towards creating needed tools or objects that could make life more meaningful or easy to live or less costly. This trait is relevant for study in present-day Nigeria because of the clarion call for engagement in Micro, Small and Medium Scale Enterprises that revolves around creativity, innovation and wealth creation. Our retirees can still be actively engaged in entrepreneurship and wealth creation despite age.

Adjustment: Adjustment is the process or ability to move flexibly from one level or condition or situation to another level without significant manifestation of positive/negative stress effect.

In the literature of gerontology, an adjustment has a lot to do with health, social, emotional and economic conditions. Any retired public servant that is capable of adjustment on these indices can live a positive life at retirement. However, adjustment on the above four (4) indices cannot manifest on the same level at some fixed period, a fluctuation between high, moderate and low is common.

Retirement: Retirement is used herein as disengagement from active service by public servants. One is due for retirement at the age 60 years (in the civil service), or due to declining health (deterioration of psychomotor performance) or at meeting compulsory regulatory conditions or all of the above combined.

In fluid and well-managed economies, the labour market is mobile and dynamic, making it easy for people to retire at any time from one job to join another without loss of benefit. In Nigeria, even at 60-70 years, retirement remains disturbing to workers.

Public servants: In the context used here, public servants would include all retired civil servants in and from state and federal ministries, government and public parastatals and companies, federal and state universities, corporations, Nigeria Airways, Sea Ports, etc. those from other states, who worked in Akwa Ibom State, retired here but found the place peaceful to settle in were all included in the study.

Akwa Ibom State: This was created in 1987, September 23. It has a total area of 7.08 square kilometres in landmass. It is located between latitudes 4°23[1] and 5°33[1] north of the Equator and longitudes 7°25[1] and 8°25[1] east of the Greenwich meridian. It has Abia, Cross River, Rivers as boundaries in the north and west, east and south-west respectively and the Atlantic Ocean by the South. Its major ethnic groups are Ibibio, Annang and Oro which make up a population of 5,450, 758 million. The state has nineteen ministries, two non-ministerial departments, seventeen tertiary institutions. The state capital is Uyo and the governor is Den Udom Gabriel Emmanuel.

b) *Statement of the Problem*

When public servants quit active working life, they often find it difficult to settle down appropriately and live satisfying lives. Their difficulty ranges from a threatening new environment with new neighbours, insufficient finances that lead to change in lifestyle, boredom and delays in the payment of their severance entitlement. Few who have a strong will to live, do so in pathetic condition of dependence on (and sense of irrelevance in) the family.

Apart from abnormal behaviour manifestation, the children and other dependants drop out of school. Those who had no houses face ejection by landlords. Serious cases of frustration in the retired could promote unhealthy indulgence in alcohol and drugs.

Despite periodic review of wages (the Abdul salami Abubarkar (1998) the payment of four years of gratuity and pension benefit that the Abacha junta denied attention, (the Obasanjo regime paid in 1999), the formation and cause championing by Union of Pensioners and Non-Governmental Organizations in the country, retired people do not yet seem to have the temerity to proclaim that they have retired and are glad they did.

In Nigeria of recent, the fate of the retired is conservatively speaking, pathetic. The high rate of inflation and the delay in pension payment render the meagre pension useless. The retiring ones face exploitation in the hand of pension office workers. Where the extreme manifests, the gratuity and pension are stolen completely by heartless and corrupt politician backed civil servant. The recent Police Pension Funds scandal involving the diversion of N32.8 billion meant for pensioners is an eye-opener (Oluokun and Utomnwen, 2012). If some senior federal civil servants and workers in lucrative oil companies like Mobil, Elf Nig. And Shell Petroleum Nig. Ltd., amongst others, who accumulate enough resources, are busy with social activities and could engage in paying entrepreneurial projects, still find it difficult to adjust at retirement, then retiring satisfactorily entails more than the above. It is this observation that prompted the study of creative

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tendencies as a personal trait to determine its influence on the retired person's degree of positive adjustment.

c) Purpose of the Study

This study sought to determine the influence of creative tendency, as a personality trait, on post-retirement adjustment of workers in Akwa Ibom State of Nigeria.

II. Review of Related Literature

Creative tendencies are used in this study to mean a behaviour manifestation that encompasses the willingness to manipulate or act upon the environment; the production of new products like forming associative elements into new combinations, transforming and evolving alternate organization or integration of diverse perceptions and decisions. These behaviour patterns require the retired to be an active manipulator or innovator in his environment to utilize information in new and meaningful ways in their dealings with the world. The creative tendency is the disposition towards creating needed tools or objects that could make life meaningful or easy or less costly to live. Creativity tendency is important in problem-solving. It emerges through the integration of a person with a culture. The influence of the cultural environment has been examined and cultures define the nature of creativity. Culture acts in a second fashion by channelling creativity.

The influence of the environment on creativity and how person and environment variables interact have, however, been barely explored.

Stein (1983) says creativity is a process that results in a novel work that is accepted as tenable or useful or satisfying by a group at some point in time. Amabile (1983) admits that the creativity of a product is to a large extent, a social judgement.

Sternberg and Lubert (1990) hold that creativity can be understood as the confluence of person variables (intellectual processes, knowledge, intellectual style, personality, motivation) and environmental variables (physical setting, state of the field of endeavour, and culture).

Both creativity and intelligence are highly inter-related. Cattell and Butcher (1968) define creativity as the ability to supply many original and diverse answers to a question which has no single pre-determined correct answer, including performances on open-ended tasks. Creativity is a significant separate dimension of giftedness. Besides intelligence, other significant factors that have been identified to influence creativity include emotional stability, dominance, radicalism and self-sufficiency. Inherent in creativity are factors like flexibility and elaboration, fluency, originality, curiosity, persistence and non-subservience.

Vargiu (1973) as quoted by Ekeruo (1989) proposed a model of creative behaviour. His model has five stages of preparation, frustration, incubation, illumination and elaboration. At the preparation stage, cognitive elements such as symbols, images, or abstract concepts are consciously manipulated in the mind to solve problems at hand. This activity is not sufficient for the solution of difficult problems and so leads to frustration, the second stage. Frustration is a stage of anxiety, and it transits into the incubation stage. The incubation stage is one of inactivity during which vague aspects of creative expressions take place. One is encouraged here by his inability to produce useful result or solutions or problems. This period can last for months or even years during which the unconscious takes over from the conscious. The next stage is the illumination stage which presents an idea that serves as a key. There is a creative field in the person's unconscious that draws the cognitive elements loosened during the preparation stage into the proper pattern, as magnet under paper draws iron filings into a pattern corresponding to its magnetic field. When the influence is strong, illumination occurs. His last stage, elaboration, involves the confirmation that the problem is indeed solved by the illumination.

Our retired public servants always faced with lack of preparation before retirement, face frustration as a result. In place of resignation to face doom in a challenging atmosphere like ours, they could think of creativity helping themselves in the process of adjusting. Though studies are not available on creativity and retirement adjustment, they are available on creativity and race, culture, problem-solving, modelling and verbal supremacy.

Using available literature on creativity, we look at the study by Aviran and Milgram (1977) that linked higher levels of conformity, dogmatism, and external locus of control to a lower level of creativity. The sample consisted of A-Wish (first), No Model (second), Flinstone (third) and Written Model (least). This experiment showed that a television programme could influence the creative responses of mature students relative to written-example, modelling and non-modelling.

To study the conditions under which the imposition of - an extrinsic constraint upon the performance of activity can lead to a decrement in creativity. Amabile, (1979) used 95 females students of Stanford University that worked on an art activity either with or without the expectation of external evaluation. The subjects were asked to focus on either the creative or technical aspects of the activity or were given no specific focus. Finally, subjects expecting evaluation were given explicit instructions on how to make their artwork. Results from the judgement of the art lecturers showed, that subjects in the evaluation groups produced artwork significantly lower on judged creativity than did subject in the non-evaluation control groups. Only those in the evaluation group that were given explicit instruction to make artwork for evaluation performed high creativity. Maslow's view (1970) that

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creativity is potentially present in all individuals at birth though most loose it as they became acculturated (formal education). Few hold onto this fresh, naive and direct way of looking at things. Since creativity is potential in everyone, it requires no special talents or capacities. It is a universal function and leads to all forms of self-expression. This is reassuring to many of .our retired senior citizens, who could through expressed tendencies still tap their creative potentials after leaving full-time employment. Taping inherent potentials and applying such in the production of items for use and even sale, organizing Non-governmental Organization (NGO) to cater for deficient groups of Nigerians, championing community development project, setting up and organizing schools, would reduce the excess time of the retired, keep them busy and reduce their level of boredom. These could make for positive adjustment and happier retirement life.

III. Methodology

The population of the study was retired public servants in Akwa Ibom State of Nigeria, made of three senatorial districts and thirty-one local government councils. Public servants are used in this study comprised civil servants and those who worked in government companies and parastatals.

The accidental sampling technique (that is those found on the spot during monthly pension payment and who agreed to be involved in the study were administered with the questionnaire) was used. A total of 299 retired public servants (RPS), 214 males, 85 females participated. Items from an earlier Self Scoring Personality Inventory Schedule by Serebriak off (1999) were adopted, patterned to suit the purpose in addition to new ones and used. This gave a 42 item questionnaire, Retired Public Servant Opinion Questionnaire (REPSOQ) that extracted information on the retired person's feeling on creativity tendencies and immigrants into Israel from the United States and the Soviet Union; Native Israeli labour formed the third group. The ranking of a score on creativity test, open-mindedness and locus of control was on migrants from the United States, Soviet Union and native Israeli labour. This result highlighted the effect of differential Socialization which is more rigid in the Soviet Union, where conformity and discipline are highly valued.

In childbearing, practices Maduro (1976) in his study on how freedom, self-expression and exploration favoured creativity noticed that children discouraged from asking questions, rarely praised for creative work, and limited from environmental exploration are less creative and less confident. Ever, creative adult painters described how they actively rebelled against these mentioned practices during their childhood years. Baron (1933) had studied the complexity simplicity dimension related to creativity with more creative subjects preferring more complex line drawings. From this, he suggested that a person's perceptual preferences may be correlated with other important individual differences. Taylor and Eisenman (1974) found that creative students preferred more complex polygons than did their less creative peers that loved less time consuming and challenging shapes.

Expanding on this study, Eiseman and Robinson (1977) used 7.5 high school students of 10th, 11th, 12th grades in an urban setting with mean Stanford-Binet 1Q of 106.1 and SD of 10.5 to investigate correlates of complexity-simplicity preferences for polygons. All who scored A or higher than 17 on the 50 item personality test were considered the high group while those scoring 15 and below were considered low. Subjects that favoured more complexity came from complexity group (whose three least preferred polygons contained more points than their three most preferred choices) were considered the low complexity group. The paper and pencil personality measure of creativity previously linked to originality was related to preferences for complexity.

Past studies by (Belcher 1975) and Harris and Evans (1973) found out that modelling of creativity can foster various types of creativity through these modelling presentations were specially developed by them for the laboratory.

Lagrace and Raymond (1978) chose to measure the effects of a creative, commercial TV programme (Make a Wish) to ensure more direct generalizability of possible findings. Creativity was operationalized as the number of word or phrase associations (fluency) and the statistical uniqueness of the associations (originality) made by the subjects in response to a given stimulus word. Five experimental groups (each comprising 5 males, 5 females) were exposed to a 15-minute videotape segment of the "Films Stones Programme" before an actual writing session. The modelling group, the control for all modelling conditions did not view television nor receive any written examples. On all four measures the make-A-Wish group had the highest level of creative performance and the written model group had the lowest. The Make-their post-retirement satisfaction of the health, social, emotional and economic indices. The questionnaire was before use, pilot-tested on 100 retired individuals in 2 local government council areas from two senatorial districts of the three used. The split-half reliability estimate ranged from 79 to 92. The local government areas and respondents involved in the pilot study were not used again in the main study.

IV. Data Analysis and Results

The data collected for the study were subjected to statistical analysis using analysis of variance (ANOVA). As presented in table 1, the result of the

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analysis showed that the calculated F-ratio of 7.733 and 9.075 for the influence of creative tendencies of retired public servants' post-retirement emotional and economic adjustment are respectively greater than the critical F-ratio of 3.00 required for significance at 0.05 level of significance with 2 and 296 degrees of freedom. It is also seen that the calculated F-ratio of 0.966 and 0.553 for the influence of creative tendencies on post-retirement health and social adjustment of retired public servants are respectively less than the critical F-ratio of 3.00 needed for significance at 0.05 level of significance; with 2 and 296 degrees of freedom. This means that the creative tendencies of retired public servants significantly influence their post-retirement emotional and economic adjustment while they do not significantly influence their health and social adjustment. This infers that null hypothesis that there is no significant difference among retired public servants who are high, moderate or low in creative tendencies with regards to their post-retirement adjustment is rejected for emotional and economic indices but upheld for health and social indices at .05 level at significance with 2 and 296 degrees of freedom.

To find out how the retired public servants differ in their post-retirement emotional and economic adjustment indices due to creative tendencies, a Post Floe test using Fishers Least Significance Difference (LSD) test was performed. The result as presented in Table II shows that the post-retirement emotional adjustment of retired public servants with moderate creative tendencies is significantly higher than that of retiring public servants without creative tendencies and significantly higher than those with high creative tendencies. However retired public servants with low and high creative tendencies do not significantly differ in their post-retirement emotional adjustment. Also, the post-retirement economic adjustment of retired public servants whose creative tendencies is moderate is significantly differing from those whose creative indices are high in terms of post-retirement economic adjustment.

Table 1: Summary data and one-way analysis of variance (ANOVA) of the influence of creative tendency on post-retirement adjustment of retired public servants.

Adjustment	Creative Tendency	N	O	SD
Emotional	Low	63	19.84	2.85
	Moderate	160	21.21	2.88
	High	76	20.00	2.70
	Total	299	20.62	2.89
Economic	Low	63	20.78	3.12
	Moderate	160	19.33	2.88
	High	76	20.51	2.71
	Total	299	19.94	2.73
Health	Low	63	17.76	3.08
	Moderate	160	17.39	2.47
	High	76	17.09	2.47
	Total	299	17.39	2.8
Social	Low	63	19.73	2.17
	Moderate	160	19.27	2.88
	High	76	19.34	3.66
	Total	299	19.38	2.97

Adjustment	Source of variance	SS	DF	MS	F
Emotional	Between group	123.582	2	61.791	7.733*
	Within group	2365.188	296	7.99	
	Total	2488.769	298		
Economic	Between group	128.473	2	64.237	0.075*
	Within group	2095.319	296	7.079	
	Total	2223.793	298		
Health	Between group	15.454	2	7.727	0.966
	Within group	2367.978	296	8.000	
	Total	2383.793	298		
Social	Between group	9.808	2	4.904	0.553
	Within group	2626.962	296	8.875	
	Total	2636.769	298		

*Significant at .05 level; df: 2.296: critical 1 3.00

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Table 2: Fishers' LSD test of the influence of creative tendency on emotional and economic adjustment.

Adjustment	Creative Tendencies	low	Moderate	High
Economic	low	19.84*	-1.37	-0.16
	Moderate	-3.26*	21.21	1.21
	High	-0.33	3.07*	20.00
Economic	Low	20.78*	1.45b	0.26
	Moderate	3.66*	19.33	-1.18
	High	0.57	3.18*	2.51

Group means is along the diagonal Difference between group means is above the diagonal Fishers' LSD t-value are below diagonal Significant at .05 level: df, 296: t 1.96

a) Discussion of the Finding

This study established that retired public servants creative tendencies significantly influence their post-retirement emotional and economic adjustment but do significantly influence their health and social adjustment.

Normally being able to create or produce some needed items/tools in the house instead of buying them would create some sense of achievement that could boost emotional stability as well as save scare money. The degree of creative tendencies displayed by the retired does not affect his/her state of health unless, of course, through the financial angle. It cannot also help him/her in relating with friends if he/she was not the open type.

However, Meichenbaum (1975) under the attitudinal self-concept approach to the study of enhancing creativity by modifying what subjects think about themselves found out that as a result of focusing training, which emphasized being aware of one's bodily feelings, the subject self-reports indicated that they felt more creative. Taylor and Eisenman (1974) realized that creative people preferred complex tasks than did the less creative others. The highly creative types who like challenges would not easily accept defeat at the task. This attitude would not only give them psychological balance but also financial satisfaction. Aviram and Milgram (1977) in their study of a high level of conformity, dogmatism and external locus of control on levels of creativity found out that creativity is negatively correlated with conformity. Dogmatism and external locus of control. People who are not monitored and controlledtend to perform better on creative tasks than those controlled since they have the freedom to operate without restraints. Our retired civil servants have only declining finance and health as retraining issues limiting them from being creative. Since the imposition of extrinsic constraints negatively impacts on the quality of creative. Since the imposition of extrinsic constraints negatively impacts on the quality of creative production, the environment should be completely devoid of the hindrance of whatever form, (Amabile, 1979). The above study supports the provision of a free environment for effective functioning creativity, but Roberts, La-Grace and Raymond (1978) after their study on whether creative modelling could enhance the spirit of creativity found out that appropriate modelling could influence the creative response of mature students.

The finding that creative tendencies do not significantly influence the retiree's health and social adjustment is not supported by any previous studies because none is available. That whether one is creative or not does not impact on one's health and one's interpersonal relationship with his/her health tend to depend more on the availability of resources for self-maintenance and ability to interact across social status and age grades. Chukwuneke (1990) upholds that the elderly maintain personal relationships when these relationships are beneficial. Satisfaction is promoted if personal resources (physiological, social and economic) are available.

In summary, retired public servants need to be creative. To start a business or to go back to school for training to open up new frontiers-business houses, small scale trading post, small scale farming, catering and restaurant outpost, fish ponds, poultry and piggery houses require not only money and good health but creativity and passionate sense of management.

V. Conclusion

The finding that no significant influence exists of creative tenderer, manifested (high, moderate, low) by retired public servants on health and social indices of adjustment shows that no matter how unhealthy one remain at retirement and how able such is to associate and relate with other people has nothing to do with his/her creative tendencies, remaining healthy tends to be tied to strongly to family health history, wellness consciousness a-c availability of resources. Ailments like asthma, diabetes, blindness, arthritis and hypertension are often common but those devoid of them live stronger and productive.

A social person remains social even when limited by age-related infirmities. Being social is a trait. Creative people do not seem to socialize easily as their creativity tends to make conservatives.

Retired public servant (RPS) with high creative tendencies tend to be uncontended if they cannot solve problems that confront them at home but the moderately creative would tend to be contented with their moderate achievement in creating things at home and in tackling personal and family problems. However,

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the lowly endowed ones would not disturb themselves out of incapability. Success at a challenging task results in a sense of fulfilment, hence satisfaction and vice versa. This is where counselling comes in imperative to help retirees with professional advice care and direction to help them cope with such situations. Though it is hard at times to advise the elderly, churches where they belong can help to advise them on issues that bother on a twist of fate. Creativity in Nigeria is erroneously and derogatorily being equated to "fastness" at forgery, fraud and manipulation of data to make money (wealth). Those who cannot steal while in the office are termed uncreative and non-Nigerian and mocked after retirement because they did not make enough wealth while in office.

Retired public servants with moderate creative tendencies having lower economic adjustment than those with high and low creative tendencies appear abnormal. Those with high creative tendencies would rather exhibit low financial adjustment while those with low creative tendencies would exhibit the lowest financial adjustment. This is not so. Since creativity is potentially present in all at birth and can be opened up through enculturation, it means it could be recovered later in life (retirement life inclusive).

Exhibiting moderate (average) creative tendencies and being able to adjust financially can be possible with retired public servants who were technicians/artisans before retirement, as experienced on the job would become useful. At retirement, financial resources are always limited and satisfaction could be promoted if the application of creative talents generates more income for the family.

VI. Recommendations

1. There should be appropriate educational programmes for the soon-to-retiree workers to prepare them for retirement life.
2. Government establishments are slow in processing retirement benefits. It is inhuman for workers to retire and for more than six months, one year or even more cannot get their gratuity. Budgets should be made for this group.
3. The government should repackage a reliable retirement scheme that would make the retired disengage from service with his gratuity, pension without any break from his last salary pay.
4. Rehabilitation and counselling centres should be set up in each senatorial districts of each state in the country to help retiring citizens integrate back into life after work.
5. Retired persons should be themselves advised to make good use of their benefits and remaining years of life in being engaged in self- sustaining ventures.
6. Staying healthy is always a problem for the elderly, churches and community. NGOs in conjunction with Local Government Areas should handle this aspect of social service for retired persons.

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Determinants of Household Dietary Diversity in Bangladesh

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Abstract- Dietary diversity is considered crucial for household welfare and also for carrying out other development activities. The emerging interest in household dietary diversity against dietary quantity presents an opportunity to estimate household food security. Based on secondary data, probit regression model was used to estimate the determinants of household dietary diversity in Bangladesh. The result suggests that household size, literacy of household head, total amount of land, married household head, total amount of remittance received and income of household head were major determinants in attainment of high dietary diversity. Government policies and intervention programs targeting the above variables may improve household dietary diversity which in turn may improve household food security.

Keywords: *determinants, food security, household dietary diversity.*

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Determinants of Household Dietary Diversity in Bangladesh

Fahima Sumaiya Laskar[α] & Muntaha Rakib[σ]

Abstract- **Dietary diversity is considered crucial for household welfare and also for carrying out other development activities. The emerging interest in household dietary diversity against dietary quantity presents an opportunity to estimate household food security. Based on secondary data, probit regression model was used to estimate the determinants of household dietary diversity in Bangladesh. The result suggests that household size, literacy of household head, total amount of land, married household head, total amount of remittance received and income of household head were major determinants in attainment of high dietary diversity. Government policies and intervention programs targeting the above variables may improve household dietary diversity which in turn may improve household food security.**

Keywords: determinants, food security, household dietary diversity.

I. Introduction

Dietary diversity refers to an increase in the variety of foods across and within different food groups (WHO/FAO,1996) capable of ensuring sufficient intake of essential nutrients that can promote good health Ruel,(2002).Dietary diversity is essential for household welfare as well as for other development activities. Households often face different challenges related to food insecurity including poor health and a decline in productivity due to insufficient access to food. As we know that different foods contain different nutrients either macro-nutrients or micro-nutrients. No single food can contain all nutrients, Labadarios *et al.,* (2011) noted that the more food groups included in daily diet the greater the likelihood of meeting nutrient requirements. Kennedy *et al.*, (2009) argued that, a diet which is sufficiently diverse may represent nutrient adequacy. Thus, dietary diversity can be viewed as a proxy measure of food security Hoddinott, (2002).

Understanding household dietary diversity can be used as an alternative easy pathway to estimate household food security Thorne-Lyman et al., (2009); Vakili et al., (2013). Lack of dietary diversity is a great challenge for rural communities in developing countries. Their diets are by default defined on starchy staples with inadequate animal products, fresh fruits and vegetables. In countries where resources are very inadequate, lack of access to adequate and diversified diet has been recognized as one of the most severe problems among poor populations and it gives rise to various forms of nutritional problems. A non-diversified diet can have negative consequences on individuals' health, well-being and development, mainly by reducing physical capacities.

Bangladesh is a developing country of South Asia. Bangladesh has made a steady progress in the expansion of food production but due to the rising population pressure, there has been an extensive utilization of land to meet the growing demand for food. Despite the increasing amount of food production and its availability, there have been reports that food availability still remains very low and food insecurity still exist mainly because of the lack of purchasing power and thus of access to food especially for the ultra -poor community. Bangladesh has the lowest availability of calories per capita in South Asia. A nationwide representative survey (State of Food Security and Nutrition in Bangladesh, 2011) estimates that approximately 45 percent of households in Bangladesh suffer from some form of food insecurity. This survey also highlights that the prevalence of inadequate maternal dietary diversity is nearly 62 percent whereas that of chronic malnutrition among children is 45 percent.

This study may provide much needed baseline information on the household dietary diversity and may contribute to the existing literature in helping to implement proper policies to improve household food security. As household food security is subject to change, it is important to explore its determinants to predict future shocks and also to understand how the household responds to food insecurity.

It is important to distinguish between dietary diversity and dietary quality. Dietary diversity reflects the number of food items or food groups consumed Ruel, (2003). Dietary quality is commonly perceived as a reflection of nutrient adequacy, proportionality and moderation of food intake (Food and Agriculture Organization of the United Nations/World Health Organization, 1998). Dietary diversity can be considered a component of dietary quality. As rightly suggested by Rashid *et al.,* (2006) a large number of studies seem to be focusing on determinants of dietary quantity at the expense of dietary quality and diversity. Therefore, it naturally arises the necessity to focus also on

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determinants of dietary diversity given the fact that a diverse diet normally rare in rural communities from developing countries is critically important for infants and young children in terms of supply of micronutrients and energy for physical and mental growth Torlesse *et al.,*(2003); Pan-American Health Organization and WHO, 2003; *Ruel et al., (2004*).On the basis of the above background, the objectives of this study is to identify the major factors which may influence household dietary diversity at the household level

II. Existing Literature

Dietary diversity is defined as the number of different foods or food groups consumed over a given reference period Hatloy, Torheim, & Oshaug, (1998). Based on the assumption that no single food can contain all nutrients, dietary diversity has been conjectured to have a greater practical potential of meeting nutrient requirements Labadarios *et al.,* (2011). Dietary diversity has been positively associated with four pillars of food security Hillbruner & Egan, (2008); Kennedy, & Labadarios, (2006). This is because it is linked with increased energy and nutrient intake, thus various improved health results including nutrient adequacy and anthropometric indices Bukania *et al.,*(2014). Therefore, obtaining information about the household dietary diversity in populations can serve as a useful indicator of assessing household food security Vakili*et al.*, (2013).

In developed countries the resources and time are often available to measure nutrient adequacy, dietary diversity, proportionality and moderation. However, in developing countries, there is a reverse situation. Simple food counts of different food groups eaten by the household over a specific period of time has been used to measure dietary diversity. The deficiency of dietary diversity is a severe problem among poor people in the developing countries suggesting that they feed mostly on starchy staples without or with use of minimal use of animal products, fresh fruits and vegetables Popkin, (1994). Hoddinott and Yohannes (2002) studied the association between household dietary diversity scores and dietary energy availability in ten countries. The study showed that, across the ten countries, the association between dietary diversity and household per capita caloric availability increases with the mean level of household per capita caloric availability. Also, poor people in some developing country face different seasonal problem which effect on nutritional status and household food security. Hillbruner and Rebecca (2008) studied effect of seasonality on food security in Bangladesh and they identified dietary diversity and lost work due to the weather as specific pathways through which season affected household food security. The most significant difference between urban and rural parts of a country concerning food access is that rural people are usually able to produce their own food, whereas urban people are entirely dependent on food purchased from the market. Hatloy *et al.*, (2000) studied dietary diversity of rural and urban people of Mali. He found a large difference in diversity between urban and rural households. Rural households had much lower dietary diversity than even the urban households with the lowest socioeconomic status. His findings further emphasize the lack of access of the rural dwellers to most of the food that is available within a developing country. This relationship has also been demonstrated in post research in Kaduna State, Nigeria showing that the low-income households were food secured on cereals, legumes and vegetables, but were not able to sufficiently access meat and meat products Odunze *et al.,* (2005). Hatloy (2000) recommended that, in order to enhance the dietary diversity in this community, it is important to improve both the general food availability as well as the capacity of people to acquire the foods.

There are two ways to measure dietary diversity one is food variety score (FVS) and another one is dietary diversity score (DDS). Hatloy *et al., (*1998) first used DDS tools, represented as a simple count of food items and food groups, can actually predict the nutritional adequacy of the diet in developing countries. Ahiman (2017) developed methodological tools to allow the identification of dietary diversity in the households and individually, such as the household dietary diversity score (DDS).An FVS is measured as the mean number of different food items consumed from a possible of 75 food items as adapted from a previous study Drewnowski, Renderson, Driscoll, & Rolls, (1997). DDS is the mean number of food groups out of nine possible groups that was consumed over the last 24 hours Kant, Block, Schatzkin, Ziegler, & Nestle, (1991). DDS provides more accurate result than FVS and DDS fits more successively than FVS in regression. A more recent study by Torey *et al.* (2004) also illustrates that dietary diversity is positively associated with nutrient adequacy in rural Mali. Rashid *et al*., (2011) has also approved the use of FVS and DDS for predicting dietary quality in Bangladesh. These studies imply the efficacy of using these simple and inexpensive counts to measure dietary diversity and therefore nutrient adequacy in specific populations in developing countries. Harris-Fry (2015) conducted a study on socio-economic determinants of household food security and women dietary diversity condition in Bangladesh using dietary diversity score.

Given the importance of dietary diversity and its possible link to food security this section summaries some of the major determinants of dietary diversity as highlighted in literature. Several studies have been carried out on the determinants of household dietary diversity as a proxy measure of food security in many different contexts (urban/rural) and levels (regional, national, local) using different variables and

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methodologies. Kidane (2004) conducted a research with primary data techniques to analyze determinants of household dietary diversity as a proxy measure of food security in Ethiopia. The study found out that educational accomplishment of even primary level can significantly affect household's food security status. Rose *et al.,* (1998) explored determinants of household food security in United States of America (USA). According to results of the analysis, there is an inverse relationship exists between schooling and food insecurity.

Size of the household, age, sex and employment status are the other major variables that can affect food security status of the family. Amaza (2006) analyzed some of these factors affecting food security at household level in Nigeria. Logistic regression results showed that chances of household's food insecurity status increase as the number of dependent family member's increases overtime. Feleke, (2005) also found a similar result while conducting a research in Southern Ethiopia. Land ownership, relative wealth, women's literacy, access to media and women's freedom to access the market all significantly reduced the risk of food insecurity Harris-Fry, (2015). This study also showed that households with vegetable gardens, rich households and literate women were significantly more likely to have better dietary diversity scores. Age of household head, income of household head and the level of education of households' head were found to significantly influence household food security in Bangladesh Ali, (2015).

Remittances had continuously been remained one of the vital sources of income and external finances for many poor people across developing countries and a promising source of economic growth Jebran et al., (2016). Remittances received from abroad were found more likely to increase household dietary diversity Abdullah *et al*., (2017).Social safety nets can also affect food security status of a family. Putnam (1995) studied that casual safety nets can take various forms such as staple sharing, credits, group membership, the receipt of remittances, house sharing, and lending of farms and animals. Income plays a key role in a household's accessibility to food. It enables households to modernize their production by giving them an opportunity to buy the necessary inputs and reduce the risk of food shortage during periods of unexpected crop failures through purchases. It was expected the total annual income of the household and food security would be positively related Muluken, (2005), Ruel, (2002); Rashid *et al.,* (2006).

Literatures suggests that there is a growing interest in understanding households and individual dietary diversity mainly because of its relevance in meeting nutrient requirements Labadarios *et al*., (2011) and nutrient adequacy Kennedy *et al.,*(2009). Moreover, positive association of dietary diversity with four pillars of food security and its simplicity in measurement is another reason for its rapid growing interest.

III. Data and Methodology

a) Data Source

The study is based on secondary data from Bangladesh Integrated Household Survey (BIHS), 2011-2012 conducted by International Food Policy Research Institute (IFPRI) under the program of Bangladesh Policy Research and Strategy Support Program (PRSSP).

b) Variable Description

In order to assess the relationship between household dietary diversity and related factors at the household level in Bangladesh, in this paper household dietary diversity scoreis used as a dependent variable and is calculated by summing the number of food groups consumed in a household in the last 7 days. In a regression model, the DDS can contribute to a significantly better fit with the measure of dietary diversity than FVS.

There are many factors that can influence house hold dietary diversity. Among these, gender of the household head (male=1), age of the household head measured in years, total income of the household, farming (=1), rural area of residence (=1), literacy of household head (=1), married head, access to safety nets, access to remittance, affected by shocks, total area of plot size in Decimals.

IV. Econometric Analysis

Models for explaining a binary dependent variable include the linear probability model (LPM), probit and logit models, Maddala, (1992); Greene, (2003), Gujarati, (2004) and Woolridge, (2015). However, since the dependent variable is dichotomous, the use of LPM is not appropriate because the predicted value can fall outside the relevant probability range of 0 and 1. Besides, it is also reported to have non-normal and non-constant error terms and posing constant effect of the explanatory variable. To overcome these problems, logit or probit models have been recommended. These models have been argued to have similar estimates, Maddala, (1992); Greene, (2003); Gujarati, (2004); Hill *et al.* (2008), Woolridge, (2015).

The concept of Dietary Diversity Score (DDS) in diet quality assessment has been tried in a number of places among some population groups, Mathews, Yudkin & Neil, (1999). At the household level, DDS is often used as a proxy for determining food access while at the individual level as a reflection of dietary quality, Vakili *et al.,* (2013). In examining the socioeconomic determinants of dietary diversity, a probit regression model is used in this study. The median DDS among the twelve food groups was calculated and used as a standard for the samples. Households whose DDS were

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below the median score were classified as "low dietary diversity" and those with DDS above and equal to the median as "high dietary diversity." HDD and LDD are shown in table 1.

Therefore, the dependent Variable (Dietary Diversity) is a binary variable represented by 1 if high dietary diversity or 0 if otherwise.

V. Results and Discussion

For this study, the twelve food groups, recommended by Food and Agriculture Organization of the United Nations (FAO, 2008), were used to assess household dietary diversity scores (DDS).

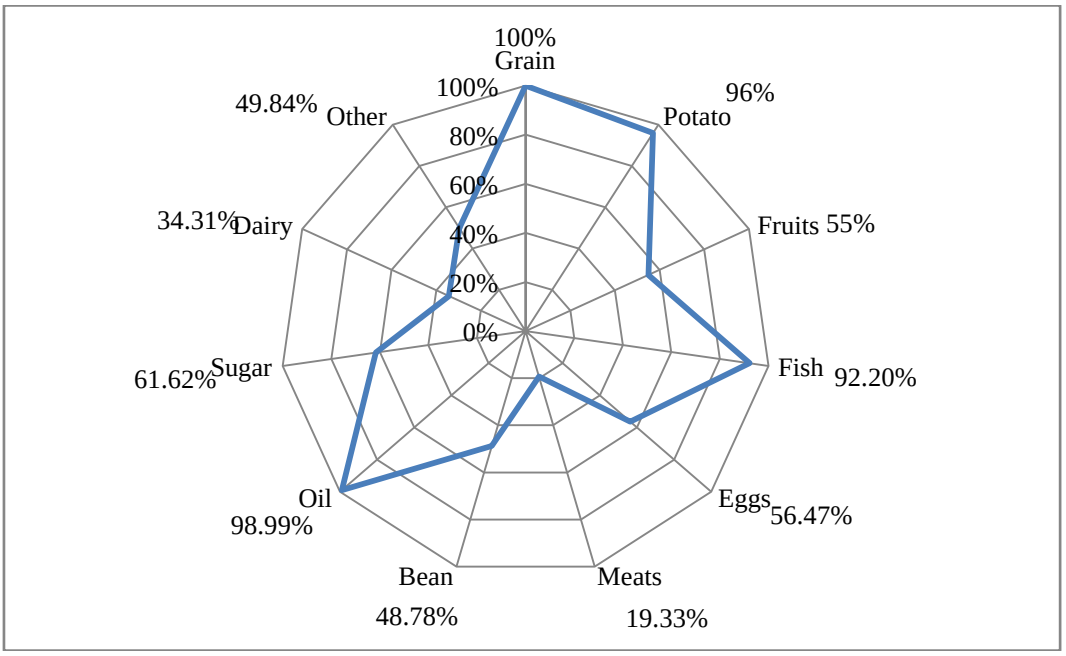


Figure 1: Categories of food groups

Figure 1 represents a summary of consumption pattern of twelve food groups. The distribution indicates that the following food groups were mostly consumed: grain (100%), potatoes (96%), oils (98.99%), and fish (92. 2%). The following food groups were also consumed but not mostly: meats (19.33%), dairy (34.31%) and beans (48.78%). The observed distribution suggests that on average households' diets are mainly dominated by food groups grains, potatoes, oil and fish at the expense of meats, dairy products, and beans.

a) Household Dietary Diversity Scores

For this study, "Yes" and "No" categories were used in the secondary dataset to measure DDS. Yes, was given a score of one (1) to each food group if the household consumed at least one food item from a particular food group for the past 7-days prior to the survey. No, was given a zero (0) score for a particular food group if the household did not consume any food item from that food group. Finally, the scores were counted from each food group and summed up and DDS were calculated based on the FAO guidelines for measuring household and individual dietary diversity. Summary of results are presented in table 1. As shown in the table, only 0.22% households had eaten only one food group whereas, 1.92% households had eaten all twelve food groups within the given period.

Table 1: Dietary Diversity Scores

Dietary Diversity Scores	Percent
1	0.22
2	0.05
3	0.09
4	1.18
5	5.66
6	11.64
7	17.68
8	20.85
9	19.02
10	14.39

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11	7.29
12	1.92
Total	100

Source: IFPRI Bangladesh Integrated Household Survey, 2011–12.

The average DDS was found to be 8(+/-1.78) different food groups eaten with 21% of households. The median dietary diversity score 8 was considered as the standard base. Therefore, table 2 shows the percentage of the households who attained high dietary diversity that means their DDS is greater than the median DDS of the households, and vice versa.

Table 2: High and Low Dietary Diversity Scores

DDS	Percent
0= LDD	36.52
1= HDD	63.48
Total	100.00

Note: LDD= Low Dietary Diversity
HDD= High Dietary Diversity

b) Determinants of Household Dietary Diversity

Based on theory and literature of empirical studies, variables ranging from socioeconomic, demographic and some other factors were examined to assess their effect on household dietary diversity score. Summary statistics of all the variables used are presented in table 3 and 4. Table 3 represents the summary statistics for all continuous variables and table 4 shows the frequency and percentage of all categorical variables.

Table 3: Description of Continuous Variables

Variables	Mean	Std. Dev.
HH Size	4.20	1.63
Age	44.17	13.98
Plot Size (decimal)	91.31	145.42
Monthly Total Income	6230	9559
Monthly Remittance Received	1473	5570
Number of observation	6,503	

Source: IFPRI Bangladesh Integrated Household Survey, 2011–12.

Table 4: Description of Categorical Variables

Variables	Percent
Male head of HH	82
Literacy of HH Head	47
Rural area of residence	80
Access to safety net	46
HH affected by shocks	46
Married Head	91
Farming occupation	42
Received remittance	15

Source: IFPRI Bangladesh Integrated Household Survey, 2011–12

Probit regression results are used to estimate the determinants of household dietary diversity. Estimated results are presented in Table 5.

Table 5: Determinants of dietary diversity from probit regression

Independent variables	Marginal Effect at Mean
Male HH Head	0.011 (0.023)
HH Size	0.040*** (0.004)
Age of HH	0.001

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	(0.001)
Literacy of HHH (1=can read and write)	0.159*** (0.013)
Rural Area of Residence (=1)	-0.086*** (0.019)
Total Amount of Land (in decimals)	0.0001*** (0.000)
Access to safety net	-0.060*** (0.013)
HH affected by shocks	0.015 (0.012)
Married Head	0.059* (0.025)
Occupation farming	0.018 (0.016)
Total Household Income (BDT)	0.017*** (0.003)
Receive Remittance (=1)	0.119*** (0.019)
Number of observations (n)	6,503
Wald chi2(12)	491.59
Pseudo R2	0.068

Source: Estimated by authors using data from the IFPRI Bangladesh Integrated Household Survey, 2011–12.

*Note: Robust standard errors are shown in parenthesi. * p<0.1, ** p<0.05, *** p<0.01*

The marginal effect of probit model suggests that larger households are more likely to attain high dietary diversity than smaller households. Since a household member may have access to food from a variety of sources (home production, purchased outside the house, received in exchange for labor, etc.), a larger household size may simply be a replication of the greater variety in food consumption patterns as a result of having more people living in the household. The area of residence implies less likelihood of high dietary diversity if the household resides in rural area. This is not surprising because rural households have limited access to diverse food items as compared to urban households especially in a developing country like Bangladesh. However, an increase in total amount of land measured in plot size is more likely to ensure high quality and diversified diet. That implies, land ownership is likely to be positively associated with high household dietary diversity both through an income or wealth effect, as well as by making available a larger stock of productive assets, Sraboni *et al*., (2014).

Consistent with the existing literature on household food security and dietary diversity, the literacy of the household head has the likelihood of a positive and significant relationship with high dietary diversity. However, the category farm occupation is likely to be insignificant with high dietary diversity. Household receives remittance are more likely to purchase a variety of foods and enjoy diversified diet than those who doesn't receive.

Households having access to safety net programs are less likely to achieve high dietary diversity probably because the poorer households are more likely to be a part of safety net program. However, affected by shocks is likely to be an insignificant indicator of the same which is followed by male head and their age. It was predictable that married heads operate functional homes and family might be more likely to have access to diversified food and therefore there are more probability to have high dietary diversity than those who are unmarried. Higher income households are more likely to have access to a variety of diets which proves that in Bangladesh, like elsewhere, income is a key determinant of dietary diversity.

VI. Conclusion and Policy Recommendation

The paper estimated the determinants of household dietary diversity in Bangladesh. The study found household size, literacy of the household head, total income of household, access to safety net programs, total amount of land owned by a household, rural residents, household received remittance, married heads are some of the influencing factors of high dietary diversity. With reference to dietary diversity status of households in Bangladesh, the paper suggests a low-quality diet mainly defined by starchy staples (grains, potatoes and fish) at the expense of protein sources (meats and dairy products). The econometric results indicate that 36.52% of households are likely to be food insecure in terms of dietary diversity score.

Results highlight positive likelihood of literacy with respect to high dietary diversity. So programs to increase literacy should be promoted. Community based health and nutrition education should also be strengthened. Access to safety net programs are less likely to have diversified and high-quality diet. So,

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targeted safety net programs for the poor should be continued and made more effective. The rural households, as estimated by the model, are less likely to access diverse food items due to low income, inadequate market infrastructure etc. and more likely to have diverse types of food having more financial supports such as remittances. Supports should be expanded for income generating activities for the rural poor as well as for adequate market infra-structure, strategic policy targeting, research and investment which might play a significant role towards improving household dietary diversity and household food security in Bangladesh. The increasing use of household dietary diversity as a proxy measure of household food security calls for further in depth-analysis and qualitative assessment which is beyond the scope of this study. However, this paper has prepared a ground on which further analysis can be done in the context of Bangladesh.

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The Effects of some Major Macroeconomic Variables on Unemployment Rate in Nigeria: A Bounds Test Approach

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Abstract- Nigeria has been experiencing a high unemployment rate over the years. The main objective of this paper is to investigate the effects of some macroeconomic variables such as; Gross Domestic Product, Treasury bill, and Inflation rate on unemployment rate in Nigeria over the period 2006Q1-2018Q4. The long-run and short-run impacts of the variables were analyzed using the bound testing co-integration. The result shows there is a long-run relationship among the variables. The dynamic error correction was carried out, and the long-run and short-run coefficients were extracted using the ARDL model. The result shows that the Gross Domestic Product has a positive significance on unemployment in the long run. However, in the short-run, only GDP contribute significantly to the unemployment rate. The Granger non-causality shows that Treasury bills do not cause Gross Domestic Product. There is unilateral causality from Treasury bill to the unemployment rate and inflation rate.

Keywords: unemployment rate, gdp, treasury bill, inflation rate, cointegration, granger non-causality.

GJHSS-E Classification: FOR Code: 910199



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The Effects of some Major Macroeconomic Variables on Unemployment Rate in Nigeria: A Bounds Test Approach

Agbolade O.A. [α] & Are S.O. [σ]

Abstract- Nigeria has been experiencing a high unemployment rate over the years. The main objective of this paper is to investigate the effects of some macroeconomic variables such as; Gross Domestic Product, Treasury bill, and Inflation rate on unemployment rate in Nigeria over the period 2006Q1-2018Q4. The long-run and short-run impacts of the variables were analyzed using the bound testing co-integration. The result shows there is a long-run relationship among the variables. The dynamic error correction was carried out, and the long-run and short-run coefficients were extracted using the ARDL model. The result shows that the Gross Domestic Product has a positive significance on unemployment in the long run. However, in the short-run, only GDP contribute significantly to the unemployment rate. The Granger non-causality shows that Treasury bills do not cause Gross Domestic Product. There is unilateral causality from Treasury bill to the unemployment rate and inflation rate. There is also unilateral causality from Gross Domestic Product to Unemployment rate, and Inflation rate, also from Inflation rate to Unemployment rate, i.e., the unemployment rate can better be predicted using the past and current values of the Gross Domestic Product. This study recommends that the government should make sure that the income from GDP is channeled to the real sector, which provides jobs (the private sector).

Keywords: unemployment rate, gdp, treasury bill, inflation rate, cointegration, granger non-causality.

I. Introduction

Unemployment is a problem in almost all countries of the world both in industrially advanced as well as poor countries. During the period of recession, an economy usually experiences a relatively high unemployment rate. There remains considerable theoretical debate regarding the causes, consequences, and solutions for unemployment. According to World Bank report (1994), deficiency in the labor market, deepening poverty, and widespread indecent standard of living are associated with high unemployment rates. Nigeria being part of the global community has its share of the effects of unemployment as it has been on a steady rise in the recent past. In Nigeria, the unemployment rate is the proportion of those who are looking for work but could not find for 40 hours or more during the a particular period to the total number employed in the labor force. The issue of unemployment in Nigeria is peculiar. This may be associated with high level of corruption, mismanagement of public funds, among others over the years. Interestingly, every government regime comes with its own economic growth increase strategy, but none has been able to achieve the desired goal. Since the continuous increase in population begun, developing nations have been characterized by unemployment. The issue of unemployment brought about some social and economic consequences such as; increase in crime rate, loss of respect and identity, reduction in purchasing power, psychological injuries, corruption, among others. Various programs such as the Youth Empowerment Program (YEP) and National Economic Empowerment Programs (NEEDS) were established to reduce the rate of unemployment in the country, but the issue of unemployment remains unchanged as observed in some studies in the 21st century. This study aims at investigating the effects of some selected macroeconomic variables such as interest rate, Gross Domestic Product (GDP), and inflation rate on unemployment in Nigeria.

a) Related works

Anthony-Orji and Okafor (2015) investigated Inflation and Unemployment nexus in Nigeria by testing if the Original Phillips curve proposition holds for Nigeria. The study adopted a distributed lag model with data covering the period 1970-2011. The result of the study establishes a positively significant relationship between inflation and unemployment rate in Nigeria which negates the original proposition on the Phillips curve hypothesis in Nigeria. Similarly, Lee (2000) conducted a study using the Okun's equation to study the relationship unemployment growth and the economy and concluded there is no stable relationship for all OECD countries. However, the study emphasized that impact of growth on employment remain valid. Ademola and Badiru (2016) investigate and determine the effects of unemployment and economic performance in Nigeria between the periods 1981 to 2014. Ordinary Least Square (OLS) technique was adopted with a various diagnostic tests to determine how fit are the data for the

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analysis. The result found that the unemployment rate and inflation rate are positively related to economic growth. The positive relationship indicates that Nigeria's GDP is driven by oil revenue that employs very limited highly skilled labor, and the price of crude oil is determined externally, which may not respond as expected to growth of the country's GDP. In testing the validity of Okun's law in Nigeria, Akeju and Olanipekun (2014) examined the cointegration between the unemployment rate and economic growth using Johansen cointegration test amongst the variables employed in the study. Empirical findings show that there is both the short and the long-run relationships among the variables and are positively related; hence, the need to incorporate fiscal measures and increase the attraction of foreign direct investment (FDI) to reduce the high rate of unemployment in Nigeria. Umaru and Zubairu (2012) investigated the relationship between unemployment, interest rate, and inflation in the Nigerian economy from 1977 – 2009. They used the following; pre-test Augmented Dickey-Fuller unit root to test the stationary of all the variables, cointegration test was conducted through the application of Johansen cointegration technique to examine the long-run relationship between the two phenomena. Holden and Sparman (2013) examined the effect of government purchases on unemployment in 20 OECD countries for the period 1980 to 2007. They observed that a one percent increase in government purchases of GDP reduced unemployment by about 0.3 percent in the same year. The effect was seen to be higher in downturns than in booms, and also under a fixed exchange rate regime than a floating regime. Onwanchukwu (2015) examined the impact of unemployment on the economic growth in Nigeria from 1985 to 2010, using ordinary least squares regression technique. His findings revealed that unemployment does not have a significant impact on the economic growth of Nigeria. Inflation, however, was found to have significant impact on the economic growth of Nigeria.

Airi Ounakpo & Anebi-Atede (2016) investigate the impact of unemployment on the Nigeria economy (1980-2010). By adopting the Ordinary Least Square Regression (OLS), the findings showed that unemployment hurts the Gross Domestic Product (GDP) of the Nigeria economy. Sansui Yahaya Enejoh et al. (2016) carried out an analytical study of the Impact of unemployment on economic growth in Nigeria using a time series data from 1970 to 2016. Granger causality reveal that there exist both unidirectional and directional causality between unemployment and economic growth in Nigeria. The result shows that there is a long run relationship between unemployment and economic growth in Nigeria. Muhammad (2014) studied the effect of inflation and unemployment on the growth of Pakistan from 1980 to 2010 using the Auto regressive distributed lag. At first, the study noted that the inflation effect varies from economy to economy, but most of the studies show that there is a positive relationship between inflation and economic growth or GDP. The result showed that there is a long-run relationship between the variables. Mohammed, Okoroafor, and Awe (2015) analyzed the relationship between unemployment, inflation, and economic growth in Nigeria from 1987-2012. Using Ordinary Least Square method of estimating model parameters, the study shows that interest rate and total public expenditure have significant impact on economic growth in Nigeria, while inflation and unemployment has inverse effects on growth in Nigeria. Imran and Iba (2014) examine the relationship between macroeconomic variables and unemployment in Pakistan from 1980-2010 using the VAR Approach. The study shows that the variables have more internal variability when compared to other variables. Madito and Khumalo (2014) examined unemployment nexus in South-Africa from 1971Q1 to 2013Q4 using the Error correction mechanism as a result of the dynamic inter-relationship between the variables used to check the speed of adjustment of economic growth to the unemployment crisis. The research work reveled that about 62 percent of economic growth is corrected each quarter. The overall results showed that there is a negative relationship between economic growth and unemployment in South Africa. Using the first difference and output-gap models of Okun's law, Arewa and Nwakanma (2012) conducted an empirical evaluation of the relation between output and unemployment. The study finds no evidence to support the validity of Okun's law, which states that when unemployment falls by 1%, GDP rises by 3% in Nigeria. Torruam and Abu (2014) examined the causal relationship between unemployment, inflation, and crime in Nigeria for the period 1980-2011. The following tests were conducted: unit root test cointegration test which was used to test for stationarity the long-run relationship among the variables respectively. Granger-causality suggested that there is unidirectional causality running from unemployment and inflation to crime in Nigeria. The study recommended that holistic effort should be made by governments at all levels to create jobs and arrest.

II. Model Setup, Estimation, and Results

This research work employed Autoregressive Distributed Lag Modeling procedure (Bounds testing) as proposed by Pesaran and Shin (1999) is used to establish a conditional unrestricted long-run level relationship between unemployment and other selected macroeconomic variables. This method performs relatively better when the sample size is small, and it is applies to a mixture of stationary and non-stationary time series, unlike Johansen's procedure, which requires the underlying variables to be integrated of the same order. Also, it allows for the inclusion of different

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lags of the response variable and the explanatory variables using the simple model selection methods such as Akaike Information Criterion (AIC), Schwarz Information Criterion (SIC), and the Hannan-Quinn Information Criterion (HQIC). The residual normality of the variables was carried out using the Jarque-Bera and serial correlation test, while the Granger Non-Causality test proposed by Toda and Yamamoto was used in identifying the direction of the models. The data used in the research covers the span from 2006-2018 quarterly data. The data was obtained from the Central Bank of Nigeria (CBN) database, Statistical bulletin and the National Bureau of Statistics (NBS). The macroeconomic variables used for the study are the Unemployment rate, Nominal Gross Domestic Product, Interest rate, and inflation rate.

Time Plot of GDP, Treasury bill, Unemployment rate, and Inflation Rate

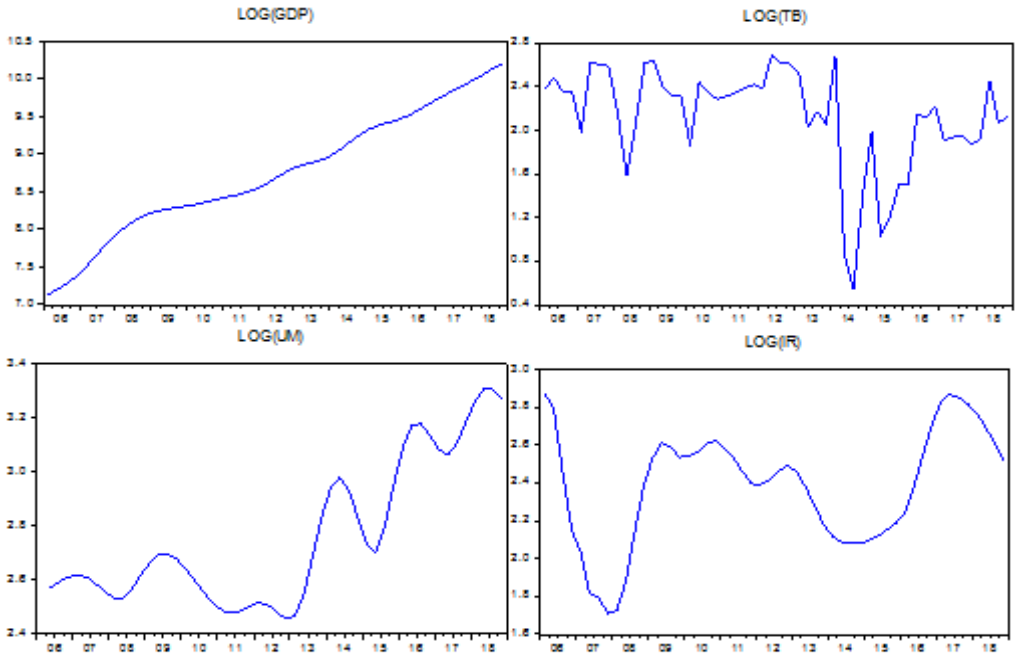


Figure 1: Log GDP, log inflation rate, log interest rate and log unemployment rate for Nigeria between 2006 and 2018

The time plot of the variables showed that variables of Inflation rate (IFR) as well as Treasury Bills (TB) were random due to their cyclical variation. Unemployment Rate (UM) and Gross Domestic Products (GDP) were found to be non-random. The non-randomness of the UM, GDP might be a result of the trend experienced in the observations of those variables, which may result in the series non-stationary. One advantage of using the ARDL methodology is that it can be applied to any series regardless of the order of the integration. Hence no unit root test was necessary. The maximum lag order for the initial VAR was done using the usual criteria of AIC, SIC, HQ, LR, FPE, as shown in Table 1 below. A maximum lag $k = 4$ was selected by these methods.

Table 1: VAR Lag Order Selection Criteria

LAG	LOGL	LR	FPE	AIC	SIC	HQ
0	-40.1183	NA	9.60E-05	2.1005	2.266	2.1612
1	201.812	426.2469	2.05E-09	-8.6577	-7.83027	-8.3544
2	302.013	157.4584	3.81E-11	-12.6672	-11.1779	-12.1213
3	414.938	155.9435	3.99E-13	-17.2827	-15.1313	-16.4941
4	446.727	37.84478*	2.10e-13*	-18.0346*	-15.2212	-17.0034*

** Selected maximum based on the information criteria*
Source: Author's computation.

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When non-stationary variables are regressed in a model, we may get results that are spurious. This can be resolved by differencing the data in order to achieve stationarity of the variables. In this case, the estimates of the parameters from the regression model may be correct, and the spurious equation problem resolved. However, the regression equation only gives us the short-run relationship between the variables and no information about the long-run behavior of the parameters in the model. This constitutes a problem since researchers are mainly interested in long-run relationships between the variables under consideration, and to resolve this, the concept of co-integration and the ECM becomes imperative with the specification,

$$y_t = \beta_0 + \beta_1 y_{t-1} + \cdots + \beta_k y_{t-p} + \alpha_0 x_{t-1} + \alpha_2 x_{t-2} + \cdots + \alpha_q x_{t-q} + \varepsilon_t \quad (1.1)$$

$$\Delta y_t - \sum_{i=1}^{p} \lambda_i^* \Delta y_{t-1} + \tau^* \Delta t_t + \sum_{j=1}^{k+2} \sum_{I=0}^{p_{j-1}} \Delta z_{j,t-1}' \beta_{j,i} * - \widehat{\emptyset} EC_{t-1} + \varepsilon_t \quad (1.2)$$

The ARDL $(p, q_1 q_2 \ldots q_k)$ model specification is given as follows;

$$\emptyset(L) y_t = \varphi + \theta_I(L) x_{1t} + \theta_2(L) x_{2t} + \theta_k(L) x_{kt} + \mu_t \quad (1.3)$$

Using the lag operator, L applied to each component of a vector,

$$L^k y = y_{t-k} \quad (1.4)$$

Is convenient to define the lag polynomial $\emptyset(L, p)$, and the vector polynomial $\beta(L, q)$. As long as it can be assumed that the error term μ_t is a white noise process, or more generally, is stationary and independent of $x_t, x_{t-1}, \ldots$ and y_t, y_{t-1},the ARDL models can be estimated consistently by ordinary least squares. Consider, an ARDL (p, q) regression with an I(d) regressor,

$$y_t = \emptyset_1 y_{t-1} + \cdots + \emptyset_p y_{t-p} + \theta_0 x_t + \theta_1 x_{t-1} \ldots + q_1 x_{t-p} + u_{1t} \quad (1.5)$$

or

$$x_t = \emptyset_2 x_{t-1} + \cdots + \emptyset_p x_{t-p} + \theta_0 y_t + \theta_1 y_{t-1} \ldots + q_1 y_{t-p} + u_{2t} \quad (1.6)$$

$t=1,2,\ldots T \quad u_t \sim iid(0, \delta^2).$

The ARDL $(p, q_1, q_2 \ldots q_k)$ model approach to Cointegration testing;

$$\Delta X_t = \delta_{0i} + \sum_{i=1}^{k} \alpha_i \Delta X_{t-1} + \sum_{i=1}^{k} \alpha_2 \Delta Y_{t-1} + \delta_1 X_{t-1} + \delta_2 Y_{t-1} + v_{1t} \quad (1.7)$$

$$\Delta Y_t = \delta_{0i} + \sum_{i=1}^{k} \alpha_i \Delta Y_{t-1} + \sum_{i=1}^{k} \alpha_2 \Delta X_{t-1} + \delta_1 Y_{t-1} + \delta_2 X_{t-1} + v_{1t} \quad (1.8)$$

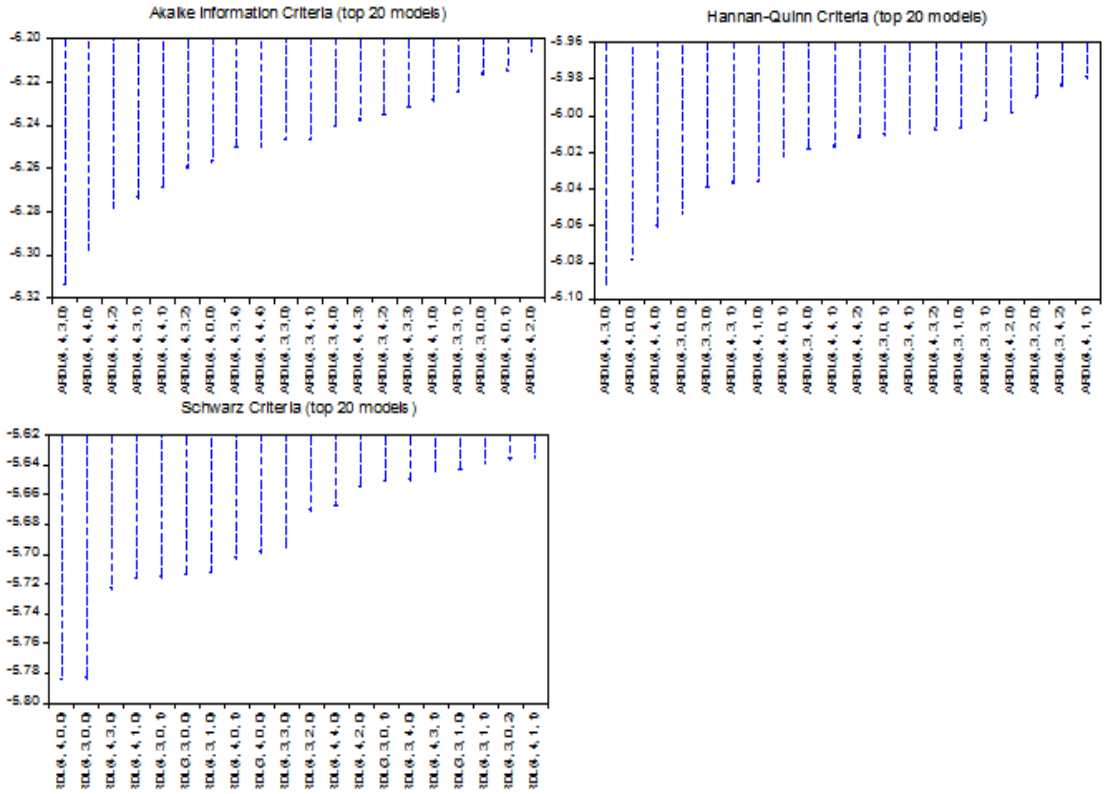
K is the ARDL model maximum lag order and chosen by the user. The *F*-statistic is carried out on the joint null hypothesis that the coefficients of the lagged variables ($\boldsymbol{\delta_1 X_{t-1} \delta_1 X_{t-1} or \delta_1 Y_{t-1} \delta_1 X_{t-1}}$) are zero. $(\boldsymbol{\delta_1 - \delta_2})$ Correspond to the long-run relationship, while $(\boldsymbol{\alpha_1 - \alpha_2})$ represent the short-run dynamics of the model. The hypothesis that the coefficients of the lag level variables are zero is to be tested. The null of the non-existence of the long-run relationship is defined by:

$\boldsymbol{H_0: \delta_1 = \delta_2 = 0}$ (The long-run relationship does not exist)

$\boldsymbol{H_1: \delta_1 \neq \delta_2 \neq 0}$ (The long-run relationship exist)

The hypothesis is tested by means of the *F*-statistic (Wald test). If the Wald F-Statistic falls above the critical value, we conclude that there is co-integration and if it falls below the lower critical bound value, conclude that there no co-integration. We specify a level unrestricted VAR (k) model using the information criteria to select the lag length, AIC, SIC, and HQ. Thus, we set our $k = 4$ in this project.

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Source: Author's computation.

Figure 2: ARDL Lag Selection using the AIC, SIC, and HQIC model selection techniques

The AIC, SIC, and HQIC model selection give 200, 203, and 200 respectively. Figure 2 illustrates graphically, the top twenty models from the models considered based on the model selection procedures respectively, and the model with the lowest information lost was selected. Hence, the AIC, SIC and HQIC selected an ARDL (4,4,3,0), (4,4,0,0) and (4,4,3,0) respectively. Determination of the numbers of lags was done using the AIC information criterion, which selected an ARDL with four lags of the unemployment rate, four lags of Gross Domestic Product, three lags of Treasury bills, and zero lag of Inflation rate. The AIC method was chosen because of its similarity with the HQIC method since it is the best among the model selector; otherwise, the later will be preferred. The result of the bound test is presented in Table 2 below.

Table 2: The ARDL Bounds Test Result

I(0) Bound	I(1) Bound	F-Stat	*K*	A
2.72	3.77	2.12	3	10%
3.23	4.35	2.12	3	5%
4.29	5.61	2.12	3	1%

Source: Author's computation.

A bound test was conducted to establish the existence of a conditional long-run relationship between the unemployment and the macroeconomics variables. Table 2 illustrates the result of the bound testing procedure. The F-statistic with 3-degree freedom shows that a value of 2.112 lies outside the upper and the lower bound, and this shows that there is a long-run relationship between the four variables. This result gives rise to the estimation of the conditional long-run level relationship model in equation 1.9, which determined the cointegrating equation $\boldsymbol{EC_{t-1}}$ (Table 3).

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Table 3: Co-integration and Long Run Form of ARDL (4, 4, 3, 0) model

Regressors	*Coefficient*	*Std. Error*	*t-Statistic*	*p-value*
$\Delta LOG(UM)_{t-1}$	1.6929	0.1496	11.3103	0.0000*
$\Delta LOG(UM)_{t-2}$	-1.2424	0.2011	-6.1558	0.0000*
$\Delta LOG(UM)_{t-3}$	0.3641	0.1191	3.0547	0.0045*
$\Delta LOG(GDP)$	1.8315	0.5539	3.3062	0.0023*
$\Delta LOG(GDP)_{t-1}$	-8.8966	2.5569	-3.4799	0.0015*
$\Delta LOG(GDP)_{t-2}$	5.4229	1.9219	2.8224	0.0081*
$\Delta LOG(GDP)_{t-3}$	-1.169	0.6061	-1.9282	0.0627***
$\Delta LOG(TB)$	-0.0018	0.0044	-0.4141	0.6816
$\Delta LOG(TB)_{t-1}$	-0.0067	0.0041	-1.6441	0.1099
$\Delta LOG(TB)_{t-2}$	0.0089	0.0039	2.2805	0.0294**
$\Delta LOG(IR)$	0.0084	0.0115	0.7371	0.4664
EC_{t-1}	-0.0475	0.0178	-2.6677	0.0119**

, **, * test that the model is significant at 1%, 5%, and 10% level of significance, respectively.*

Source: Author's computation.

From Table 3 for the short-run dynamics, Log of UM at lag 1 has a positive effect on UM, and it is significant at all levels of significance ($0.000 < 0.1$), which means a percentage increase in UM will result in an increase of 1.69% on itself. At lag 2, which is also significant at all levels ($0.0000 < 0.1$), shows that a percentage increase in UM will bring about a decrease of 1.24% on itself. At lag 3, which is also significant at all levels ($0.045 < 0.1$), indicate that a percentage increase in UMR will result in an increase of 0.36% on itself. The overall conclusion here is that, at lag 1 UM as an appositive effect on itself, at lag 2, it hurts itself, which shows that as we are increasing the lags, it is changing from positive to negative and from negative to positive. The average effect shows that a percentage increase in UM will bring about an increase of 0.2715% on itself. Considering the current value of GDP which is significant at all levels ($0.023 < 0.1$) has a positive effect on UMR, this implies that percentage change in GDP will bring about an increase of 1.8% on UMR provided all other variables are held constant i.e., as GDP is increasing UM is increasing alongside with it. This contradicts the ideal Okun's law that 1% decrease in GDP will result in an increase of 0.3% on UMR. At lag 1, the p-value $0.015 < 0.1$, which is also significant shows that a percentage increase in GDP will result in a decrease of 8.896% on UM. Moving a step backward, at lag 2, it shows that a percentage increase in GDP will result to an increase of 8.422% on UM with p-value $0.0081 < 0.1$, which is also significant at 10%. At lag 3, a percentage increase in GDP will result in a decrease of 1.17% on UM with p-value $0.0627 < 0.1$ which is also significant at 10%. Considering the average effect which claims that a percentage increase in GDP will result in a decrease of 1.547% on UM while other factors remain constant. The current value of TB shows that a percentage increase in TB will bring about a decrease of 0.00182% on UM with an insignificant p-value of 0.6816. Lag 1 showed that a percentage increase in TB will result in a decrease of 0.0067% on UM with an insignificant value of 0.1099. At lag 2, a percentage increase in TB will bring about an increase of 0.0089% on UM with a significant value of 0.0294. The average effect shows that a unit increase in TB will bring about an increase of 0.0005% on UMR holding other factors constant. The current value of IR, which is significant at all levels, shows that a percentage increase in IR will result in an increase of 0.0085% on UM. For the long-run dynamics, the long run coefficient $\boldsymbol{EC_{t-1}}$ is negative and lies between 0 and -1, which makes the result of existence of long run from the bound test significant because the value is less than all the critical values which makes the speed of adjustment significant. The speed of adjustment of UM to disequilibrium cause by shocks on other macroeconomic variables with coefficient of -0.0476 indicate that over 4% of the disequilibrium error in the system arising from the influence of external shocks are corrected quarterly which is slow. The GDP which is the most significance with respect to speed of adjustment -0.0476 indicate that UM react slowly to shocks on GDP and this is exactly what is happening in Nigeria, GDP is rising but it effect on UM is rarely seen, these could be to the fact that income from GDP is not well managed or being channeled wrongly in such a way that private sector can grow. The positive relationship indicates that Nigeria's GDP is driven by oil revenue that employs very limited highly skilled labor, and the price of output of crude oil is determined externally, which may not respond as expected to growth of output in the country.

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$$EC_{t-1} = [\log(um)_t - 0.3122\log(gdp) - 0.0988\log(tb) + 0.1783\log(ir)] \quad (1.9)$$
(0.1047) (0.1374) (0.2207)
(2.9831) (-0.7189) (0.8079)

Note, the immediate value under each coefficient is the standard error. This model was checked for residual serial correlation and normality using the Breusch-Godfrey Lagrange Multiplier (LM) Serial correlation test and Jarque-Bera test respectively. The LM was based on computed *F*-statistic = 2.6101 (*p-value=0.0568)* and $\chi 2$ (4) = 12.7652 (*p-value = 0.0125*). We could not reject the null hypothesis of no residual serial correlations at 5% and 1% levels of significance respectively. Furthermore, Jarque-Bera 0.598761 with a p-value of 0.741277 also shows that the error term is normally distributed.

a) Granger Non-Causality

According to Toda and Yamamoto (1995), economic series could be either integrated of the different orders or non-co –integrated or both. In this case, the ECM (Error Correction Model) cannot be applied for Granger causality test. Hence, they developed an alternative test, irrespective of whether $\boldsymbol{Y_t}$ *or* $\boldsymbol{X_t}$ are I(0). I(1) or I(2), non-co-integrated or co-integrated of arbitrary order. This is widely known as the Toda and Yamamoto Augmented Granger Causality. This procedure provides the possibility of variables based on asymptotic theory. Toda and Yamamoto Augmented Granger Causality test method is based on the following techniques.

$$\boldsymbol{Y_t = \alpha + \sum_{i=1}^{h+d} \beta_1 Y_{t-1} + \sum_{j=1}^{k+d} Y_j X_{t-j} + U_{yt}} \quad (2.0)$$

$$\boldsymbol{X_t = \alpha + \sum_{i=1}^{h+d} \theta_i X_{t-1} + \sum_{j=1}^{k+d} \delta_j Y_{t-j} + U_{xt}} \quad (2.1)$$

Where *d* is the maximal order of integration of the variables in the system, *h and k* are the optional lag length $\boldsymbol{Y_t}$ ***and*** $\boldsymbol{X_t}$ and ε_t are error terms that are assumed to be uncorrelated. The maximal order of model is determined and a VAR is constructed at levels with a total of *(k+d)* lags. Let *y* and *x* be stationary time series. The null hypothesis that *x* does not granger cause *y* can be tested by initially finding the proper lagged values of *y* to be included in a univariate autoregression of *y*:

$$\boldsymbol{y_t = \alpha_0 + \alpha_1 y_{t-1} + \alpha_2 y_{t-2} + \cdots + \alpha_m y_{t-m} + \varepsilon_t} \quad (2.2)$$

Next, the auto regression is augmented by including lagged values of *x*:

$$\boldsymbol{y_t = \alpha_0 + \alpha_1 y_{t-1} + \alpha_2 y_{t-2} + \cdots + \alpha_m y_{t-m} + b_p x_{t-p} + \cdots + b_q x_{t-q} + \varepsilon_t} \quad (2.3)$$

The null hypothesis that *x* does not granger cause *y* is accepted if and only if no lagged values of *x* are retained in the regression. Having established the existence of long-run relationships amongst the macroeconomic variables, we proceed to the test of granger non-causality using the Toda and Yamamoto procedure.

Table 4: VAR Granger Non-Causality/Block Exogeneity Wald Tests

LOG(UM)				LOG(GDP)			
Excluded	Chi-Sq	DF	Prob.	Excluded	Chi-Sq	DF	Prob.
$LOG(GDP)_{t-5}$	59.3166	4	0.0000	$LOG(UM)_{t-5}$	9.3042	4	0.0539
$LOG(TB)_{t-5}$	17.73649	4	0.0014	$LOG(TB)_{t-5}$	3.7576	4	0.4398
$LOG(IR)_{t-5}$	26.57274	4	0.0000	$LOG(IR)_{t-5}$	27.9166	4	0.0000
ALL	77.46377	4	0.0000	ALL	43.0115	12	0.0000
LOG(TB)				LOG(IR)			
Excluded	Chi-Sq	DF	Prob.	Excluded	Chi-Sq	DF	Prob.
$LOG(UM)_{t-5}$	11.4765	4	0.0217	$LOG(UM)_{t-5}$	14.3605	4	0.0062
$LOG(GDP)_{t-5}$	12.1679	4	0.0161	$LOG(GDP)_{t-5}$	19.8653	4	0.0005
$LOG(IR)_{t-5}$	18.5271	4	0.001	$LOG(TB)_{t-5}$	9.6539	4	0.0467
ALL	26.8767	12	0.008	ALL	23.3864	12	0.0246

Source: Author's computation.

The result above where the Unemployment rate is the dependent variable reveals that the null hypothesis that GDP, TB, and IR does not Granger cause unemployment rate is rejected at all levels of significance since all their p-values are less than 0.001,.005 and 0.1, which shows that there is causality amongst the variables. For GDP as the Dependent variable, UM and TB are significant at 1% except for TB, which is not significant at all levels because it has its p-value of 0.4398 > 0.01. For TB as a dependent variable, the null hypothesis of no granger cause is rejected because the independent variable UM, GDP, and IR has the p-value 0.0217, 0.0161, and 0.001 respectively to be less than 0.05 level of significance. For IR as dependent variables, the null hypothesis that UM, GDP and T B does not granger cause TB is rejected at 5% level of significance since the p–value 0.0062 of Um is less than 0.05, p-value 0.0005 of GDP is less than 0.05 and p-value 0.0467 is less than 0.05. The variables show both uni- and bi-directional causality.

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Table 5: Summary of Toda-Yamamoto Granger non-causality test

Relation	Direction of causality
	$k = 4$
Treasury Bills vs. Unemployment rate	Bidirectional
Gross Domestic Product vs. Unemployment rate	Bidirectional
Inflation Rate vs. Unemployment Rate	Bidirectional

Source: Author's computation.

There is unilateral causality from Treasury bill to the unemployment rate and inflation rate. There is also unilateral causality from Gross Domestic Product to Unemployment rate and Inflation rate, also, from Inflation rate to Unemployment rate, i.e., the current value of unemployment rate can better be predicted using the past and current values of the Gross Domestic Product.

III. Conclusion

This study investigates the effect of GDP, interest rate, and inflation rate on the unemployment rate in Nigeria. The conditional unrestricted long-run level relationships show that the Gross Domestic Product rate does have a statistically significant effect on the unemployment rate in Nigeria. However, a small negative effect is also an indication that the long-term rising of Gross Domestic Product has a diminishing effect on the unemployment rate. The co-efficient of the co integrating relation EC_{t-1} measures the speed of adjustment to disequilibrium caused by shocks on GDP in the model. While GDP is rising, the unemployment rate is rising alongside it, and this implies that some sustainable sectors of the economy, which provide real jobs such as private sectors, are not equipped and empowered. The income from GDP is not channeled to the source. Furthermore, the result from the Toda and Yamamoto Granger non-causality reveals that there is unilateral causality from Treasury bill to the unemployment rate and inflation rate. There is also unilateral causality from Inflation rate to Unemployment rate from 2009. More importantly, from Gross Domestic Product to Unemployment rate, there is a unilateral relationship, i.e., the current value of the unemployment rate can better be predicted using the past values of the Gross Domestic Product. It is without doubt that the country's GDP is growing fast, but its contribution to unemployment is not desirable because an increased in GDP has not translated into an increase in the employment rate. This research work concluded that this is possible because income from GDP is not being plowed back to the real sector of the country's economy.

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Rural Poverty and Environmental Degradation in Annang Nation of Akwa Ibom State

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Abstract- This study was undertaken to assess the contribution of the rural poor people to environmental degradation in Annang nation of Akwa Ibom State. Related literature was reviewed on sex, religio n, marital status, family size and age. Five hypotheses were formulated for the study. Stratified random sampling technique was used to select one thousand, five hundred respondents for the study. The instrument for the data collection was 25 item questionnaires on Rural Poverty and Environmental Degradation (SUQRURED). Data from one thousand, five hundred completed questionnaires were used to analysis. Hypotheses were tested using the independent t-test. The result indicated that the contr ibutions of the rural poor people toward environmental degradation do not differ by their family sizes and age. Recommendations were made towards quality protection of the environment from degradation.

Keywords: rural poor people, rural poverty, environmental degradation, annang nation, akwa ibom state.

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I. Introduction

Poverty in whatever dimension is a disease and the poor are not only disadvantaged in the community but traditionally bears the brunt of community problems, environmental degradation inclusive, The rural ecosystem is rich in biodiversity. The higher the number of species, the greater the stability of an ecosystem. All species are important for environmental stability. The rural setting is predominantly characterized by desperate human attempts to harness different natural and environmental resources in farming, mineral extraction and forest resources exploitation. We can no longer boast of virgin-forests and ancestral land because of increasing vigorous exploitation of these resources to satisfy human needs. Because of selfish interest underlying this exploitation, there is a glaring lack of proper coordination in harnessing resources resulting in man-induced environmental degradation. There is a high correlation between poverty and environmental exploitation and degradation.

a) Explanation of Terms

In this study, poverty, degradation and Annang nation as used in this context have the following meanings:

Poverty: Is a condition of serious deprivation or lack of resources necessary for a living within a minimum standard conducive to human dignity. Poverty dominance in the rural area is greatly caused by lack of gainful employment to generate income since everybody is engaged in subsistent agriculture. Even able-bodied people looking for work cannot find any except working the land. Poverty impacts on the environment in diverse areas of Akwa Ibom State, Annang nation inclusive.

Degradation: This is the reduction in the quality of environment (air, land, water) to the level that it can no longer positively or profitably sustains healthy human existence or reasonable human activities. When the human environment (air, land, or water) is affected by degradation agents, the life of the inhabitants is affected. Serious degradation can cause famine, plague epidemics, migration and death. When left unattended to by the government in place, resistance (peaceful or armed) could manifest.

Annang Nation: In this paper refers to all Annang speaking areas of Akwa Ibom State of Nigeria. The area covers eight (8) Local Government Areas of the State namely Abak, Essien Udim, Etim Ekpo, Ika, Ikot Ekpene, Obot Akara, Oruk Anam and Ukanafun. There is about four million Annang language speaking people in Akwa Ibom State and over one million speaking people living outside the states. (2018 estimate, Wikipedia).

b) Literature Review

People in a bid to survive hard times exert effort (legitimate or illegitimate) in exploiting and utilizing available resources to meet their short or long term economic interest. Illiteracy or lack of awareness among men, women, children and the low-income group on proper utilization of the environment produces different artisans who depend on the natural environment for their livelihood. While Peters (1987) sees the male rural poor as different from the females in their handling of the environment. Okon (1994) contrasts that the male and female rural poor are not different in their behaviour towards the environment. Grille (2013) insists that women are always seen as promoters and victims of environmental degradation. Both male and female engage in garri processing and palm oil production and these two jointly generate waste materials that contribute to environmental degradation. Unwise use of the land during agricultural practices and deforestation promote degradation of a vast area of farmland over time. Ebin (1995) found out that the married ones

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engage actively in quarrying activities, bush burning to hunt out games, cutting of trees for fuelwood and continuous cropping of the same farmland for years. Rural large families without formal education nor exposure are ignorant of the adverse effect of their actions on the environment. The destruction of biomass, bush fallowing, shifting cultivation, fuelwood consumption and trade on timber seriously deplete the environment causing serious deforestation and accompanying environmental problems including erosion in some areas (Ukegbu, 1994).

In the rural setting, the poor constitute more than seventy per cent of the population and in many developing nations of the world birth rate still, remain alarmingly high because few couples believe in limiting family size. They believe that children are valuable God-given assets in societies where social welfare measures are few and provision for old age almost impossible because of poverty. According to Sumonis (2002), polygamous families engage in intensive farming to provide food for their families and for titled chiefs, the more wives and children they acquire the easier for them to engage in extensive yam farming. The growing population demands more farmlands hence the demand for forest land, cropland, household gardens and freshwater. The overutilization of these resources results in environmental degradation and extensive generation of the garbage that pollutes the communities. When arable land is unduly stressed through continuous cultivation it leads to poor yield; use of artificial fertilizers, insecticides and other chemicals, which destroy the soil structure, the ecosystem and soil microbes rendering such farmlands difficult to rejuvenate.

While adherents of traditional religion preserve everything natural through sacrifices to their different gods (gods of the land, sea, forest, sun, moon, etc.,) and as such the environment, Christians because of their belief and interpretation of Genesis 1:28 feel they should dominate, exploit and plunder and destroy the work of creation to a point of extinction. (Ntia, 1995). Sacred groves, forest groves that protect water heads, community forest lands that preserved the myths of such communities when cleared for whatever reasons open up such areas for erosional influences. Ecosystems destroyed would also affect the biodiversity they custody as well as the soil structure.

It is accepted that both the youths and adults degrade the environment. Restless youths have been associated with bush burning for gaming, generating a vast store of carbon (iv) oxide into the atmosphere, (Kumbo, 2002). Carbon (iv) oxide formed is among gasses that make for the atmospheric imbalance that gradually and slowly warm the earth. Sumonis (2002) believes the youths engage in throwaway mentality, a mentally that makes people unappreciative and thoughtless as they casually waste resources. This carefree attitude promotes the discarding of clothing's/ furniture and other personal items that lead to the degradation of the environment and waste of resources. As both youth and adult engage in indiscriminate farming and degradation of the ecosystem (Abang, 1995) wonders why a man who should be friendly with the environment to sustain him am' future generation has turned up, either because of ignorance or selfishness, to kill the same environment.

In Oruk Anam and Ukanafun local government areas of Annang Nation, oil drilling and gas flaring in the rich Niger Delta, have caused serious degradation. Pollution (air, water and soil) through oil spillage, gas flaring, water source, poisoning has greatly affected the people. Pollution in the above areas results in degradation. Pollution covers the ecosphere (lithosphere, hydrosphere and the atmosphere). (Oil spillage destroys marine vegetation and lives, pollutes wafer sources, reduces farm yields and poisons tubers (yam and cassava) Agbo (2003) reports that gas flaring destroys vegetal growth and roofs of the building. Roofs are changed every three years. The heat from the gas flaring at 1300 - 1400°c, destroys vegetal growth. The effluent and chemical contents in the gas flared return to earth as acid rain that corrodes roofs of the building.

II. Methodology

The population of the study was inhabitants of the Annang nation of Akwa Ibom State (comprising Abak, Essien Udim, Etim Ekpo, Ika, Ikot Ekpene, Obot Akara, Oruk Anam and Ukanafun local government areas). Sampling was done in stages. Five (5) local government areas were sampled out of eight (8) through random sampling without replacement. The second sampling was to select ten villages in each of the selected local government areas. The same method of sampling without replacement was used to select the names of the villages in each of the five local government areas. The third step was to get thirty respondents from each of the villages. Accidental sampling was used for respondents literate enough to understand the items of the questionnaire and react to them. Village gatherings at churches and or village squares were used to get enough respondents. A total of one thousand, five hundred respondents were used comprising seven hundred and fifty of each sex (750 males, 750 females),

A 2.5 items questionnaire, Survey Questionnaire on Rural Poverty and Environmental Degradation (3UQRUPED) was used to extract information from respondents on their feelings on degradation based on gender, marital status, family size, religious affiliation, and age.

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III. Data Analysis and Results

The data collected for the study were subjected to statistical analysis using the t-test, as presented in tables 1 -5:-

Table 1: t-test analysis of the contribution of male and female rural poor to environmental degradation.

Source of Variation	N	Six	X	SD	Df	t.cai	t.crit	Decision
Female	750	50,825	67,86	5.43	1498	5.97	1.96	s
Male	750	50.063	66.86	2.88				

As shown in table 1, the calculated t-test value of 5.97 is greater than the critical t-test value of 1.96, at 0.05 level of significance and df of 1498, the result is statistically significant. This implies there is a significant difference between male and female rural poor contribution to environmental degradation.

Table II: t-test analysis of the contribution of married and single rural poor to environmental degradation.

Source of Variation	N	Sx	X	SD	Df	t.cai	t.crit	Decision
Married	900	61,308	68.12	5.43	1498	0.36	1.96	ns
Single	60	40770	62,95	7.97				

From the analysis in table II, the calculated t-test value is 0.36 while the critical t-test is 1.96 at 0.05 level of significance and df of 1498.

There was no significant difference between married and single rural poor contribution to environmental degradation.

Table III: t-test analysis of the contribution of large and small rural poor families to environmental degradation

Source of Variation	N	Sx	X	SD	Df	t.cal	t.critical	Decision
Large Family	857	58233	67.95	4.74	1498	129.32	1.96	ns
Small Family	643	31.211	48.54	20.17				

Table III presents a calculated t-test value of 129.33 and a critical t-test value of 1.96 at 0.05 level of significance and a df of 1498. This result shows that there was a significant difference in the contribution of large and small families to environmental degradation.

The working null hypothesis that there was no significant difference between large and small families in contribution to environmental degradation was therefore rejected.

Table IV: t-test analysis of the contribution of rural poor Christian and non-Christians towards environmental degradation.

Source of Variation	N	Sx	X	SD	Df	t.cai	t.crit	Decision
Christians	967	65,804	65.76	4.76	1498	0.83	1.96	ns
None-Christians	533	35.902	67.36	3.93				

From table iv, we have a calculated t-test value of 0.83 and critical t-test value of 1.96 at 0.05 degree of significance and 1498 df. This means there was no significant difference in the contributions of Christians and non-Christian to environmental degradation. The null hypothesis was therefore retained.

Table V: t-test analysis of the contribution of rural poor youth and adult to environmental degradation

Source of Variation	N	Sx	X	SD	Df	t.cai	t.crit	Decision
Youth	1160	79,228	68.3	4.58	1498	33.8	1.96	s
Adult	340	22,338	65.7	4.07				

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The result from table v above shows a calculated t-test value of 33.8 and critical t-test value of 1.96 at 0.05 degree of significance and df of 1498. This is statistically significant. There was a significant difference between rural poor youth and adult in their contributions to environmental degradation.

IV. Analysis of Findings

The result of the analysis in table 1 showed that there was a significant difference between sexes towards environmental degradation. This seems a contrary finding to popular opinion that women are very close to the environment since they cannot do without resources from it, especially in the rural setting. Nenty (2009) had found out that women in the rural communities in Ikono LGA were not only impoverished but fertile with attendant high population. The high population and poverty made them impact negatively on the environment to survive though through enlightenment, they can save the environment. Nduke (1997), Okon (1994) and Noibi (1991) in their studies presented contrary findings that both female and mule rural dwellers do not differ in their behaviour towards the environment. Both male and female use land equally in agricultural practices use chemical fertilizers and herbicides and in the processing of farm yields, to produce garbage and waste into the environment.

The result in table II showed no significant difference between single and married rural poor towards environmental degradation, Nworgu (1998) and Ebin (1995) found out that married rural poor constitute the greatest population threat to the environment. They engage in quarrying activities, bush burning and continuous felling of trees for fuelwood and shelter construction just as the singles do. The singles require little resources for their upkeep, so through engagements in "menial jobs sponsored by the rich, are instruments of environmental degradation.

Large rural poor families significantly contribute more to environmental degradation especially polygamous ones that engage in intensive farming. Nuclear rural poor families do not engage much in farming and generation of garbage as do large families. They are not known to impact much negatively on the ecosystem, biodiversity and the destruction of soli structure as do large, rural poor families that engage in crude intensive farming to produce enough food to sustain large family size. Summarily, there was a significant difference in the contribution of rural poor large and small families to environmental degradation.

Table IV had a no significant difference between rural poor Christians and non-Christians in their contributions to environmental degradation. The non-Christians are regarded as traditional custodians of culture to preserve totems, sacred animals, shrines, forests and groves were ancestral spirits abide. As traditionalists, they believe that animal life form or soul has a connotation with human existence and that some objects have some powerful spirits and deities one should not recklessly tamper with (Odum, 1975). With this mindset, they religiously protect the environment. However, a development that brings the opening of schools, roads, industries, churches, and the demystification of shrines and forests cut down by Christians encourage non-Christians who should be friends of the environment to join their Christian brothers to degrade the environment. Development and its twin brother, technology, have degraded the environment. When forests protecting water head are cleared, springs dry up and technology provides water through boreholes.

Table V has a statistically significant result meaning that there was a significant difference in the contribution of rural poor youth and adult to environmental degradation. Both youth and adult are dangerous to the environment but we note that adult forms the majority of the married and large families that engage in quarrying of stones and gravel, extensive and intensive deforestation for the cultivation of farmland. Ukit (2001) had confirmed the cutting of trees for building of mud and thatched houses. Hunger and the search for food by adults through farming are critical issues that cannot be ignored. This makes the adult more vulnerable than youth who contribute to degradation to come a distant second.

V. Conclusion

Though we accept that there is a symbiotic relationship between rural poverty and environmental degradation, this study found that the contribution of the rural poor people differ significantly by gender, family size, and age but not significantly by marital status and religious affiliation. In the rural setting, the exploitation of resources from the ecosystem cannot be ruled out. What is needed is the sustainable exploitation of these resources so that the ecosystem would be preserved for future generations. Degradation kills the environment and this must be checked through education.

VI. Recommendations

1. Public enlightenment and education should be given to rural poor people to avoid some of the activities that promote degradation.
2. The rural people should be given lessons on modern agricultural practices that help sustain the ecosystem.
3. Public campaigns should be periodically mounted in the rural areas to make the people familiar with sustainable exploitation of the environment and its resources.
4. There should be increased and sustained economic empowerment packages for poor rural fanners to

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encourage them to plant more to feed their families arid to sell for wealth.

5. Agricultural Extension agents should be adequately trained in environmental preservation technique to train rural poor farmers who engage in the actual farming.
6. Communities should be, allowed to instil stricter penalties on defaulters of bush burning and deforesting water grove Ural shelter water table and springs heads.

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FELLOWS

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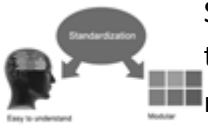
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g) Suitable statistical data should also be given.
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Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

19. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

20. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

21. Report concluded results: Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

22. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

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Informal Guidelines of Research Paper Writing

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear: Adhere to recommended page limits.



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Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.
- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.



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Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

Figures and tables:

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an argument should be.

Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."

Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

The Administration Rules

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Please read the following rules and regulations carefully before submitting your research paper to Global Journals Inc. to avoid rejection.

Segment draft and final research paper: You have to strictly follow the template of a research paper, failing which your paper may get rejected. You are expected to write each part of the paper wholly on your own. The peer reviewers need to identify your own perspective of the concepts in your own terms. Please do not extract straight from any other source, and do not rephrase someone else's analysis. Do not allow anyone else to proofread your manuscript.

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Topics	Grades		
	A-B	**C-D**	**E-F**
Abstract	Clear and concise with appropriate content, Correct format. 200 words or below	Unclear summary and no specific data, Incorrect form Above 200 words	No specific data with ambiguous information Above 250 words
Introduction	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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