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ECONOMIC GROWTH AND HUMAN NETWORKING

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Abstract

The purpose of study is to examine the role of guanxi or human networks on economic development. We are concerned with dynamic interdependence between wealth, guanxi and human capital in a neoclassical growth model. Guanxi changes due to investment in human networking and can affect productivities of economic activities. Establishing guanxi costs time, consumer goods and capital goods. We introduce guanxi into the Solow-Uzawa growth model. We simulate the nonlinear dynamic model. The economic system has a unique stable equilibrium point. We are mainly concerned with the effects of changes in some parameters on the equilibrium and transitional processes of the economic dynamics. We get some insights into interdependence between guanxi and economic growth. For instance, if trust deteriorates among member of society which results in a rise in deterioration rate of guanxi, then the guanxi becomes weaker and the human capital falls; the household spends more hours on establishing guanxi and less hours on work; the national output, national capital and national output fall; the wage rate and rate of interest fall; and the per household wealth and consumption levels of two goods fall.

Key words:
guanxi; return to scale in building guanxi; economic structure; economic growth.

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1. Introduction

The purpose of this study is to incorporate endogenous guanxi in neoclassical growth theory. In the 1980s guanxi had already appeared in the literature of business that
emphasizes cultural factors in doing business in China (Butterfield, 1983; Alston, 1989; Ai, 2006; Lee and Anderson, 2007). Fan (2002: 544) observes: “It was believed that right guanxi was a vital factor in business negotiation, and could bring a wide range of benefits: securing rare resources, bypassing or short-cutting the bureaucratic maze, obtaining information and privilege, selling otherwise unsellable goods, providing insurance against uncertainty and assistance when problems arose.” This study is related to “capital” aspects of guanxi in the sense that guanxi is treated as a stock variable. According to Fan (2002: 549), guanxi is a form of “social capital, an important resource that a person can tap into when there is a need to find help or support. To develop and maintain a guanxi relationship is like putting one’s money into a saving account or purchasing an insurance policy so that one could get help whenever he needs. Guanxi equity is a set of assets and liabilities linked to a guanxi relationship.” Changes in guanxi are subject to investment and deterioration. The importance of guanxi is well-recognized in studies of Chinese management as marked by (Luo, 1997: 43) “It is widely recognized that Guanxi is a key business determinant of firm performance because the life blood of the macro and the micro business in the society is conducted through Guanxi networks.” In Chinese societies, Guanxi “is essence a network of resource coalition-based stakeholders sharing resources for survival” (Su, et al. 2007: 301). “A typical Chinese company is accustomed to living in a clan-like network, called Guanxi wang (Guanxi-net), which includes the direct and indirect blood relationships, distant relatives, direct and indirect friends, colleagues, schoolmates, and others with interests” (Badi, et al. 2017: 206). For individuals, organizations and firms guanxi is significant for securing favors with established long-term personal and organizational relationships (e.g., Wong and Chan, 1999; Yau et al. 2000; Yang and Wang, 2011; Shaalan, et al. 2013; Wong and Huang, 2015; Badi et al. 2017). The sustainability of guanxi is partly due to low-trust social environment, institutional uncertainties, and not properly functioning legal systems in Chinese societies (e.g., Styles and Ambler, 2003; Luo, 1997, 2008). Some studies (Yeung and Tung, 1996; Ambramson and Ai, 1999) identify guanxi as an important key determinant in doing business in China.

In a broad sense guanxi may be considered a kind of social capital. As Knack and Keefer (1997) point out, the concept of social capital implies different meanings such as trust, cooperative, and associations within groups. Putnam et al. (1993: 167) considers social capital as “those features of social organization, such as trust, norms, and networks that can improve the efficiency of society by facilitating co-ordinated actions.” The way that this study models guanxi is influenced by modeling social capital in the literature of social capital and economic growth. There are many studies on relationships between social capital and economic growth (e.g., Putnam et al. 1993; Knack and Keefer, 1997;
Buegelsdijk and van Schail, 2005; Iyer, et al. 2005; Bofota et al., 2016). As far as how to model social capital is modeled, this study is influenced by Bofota et al. (2016). Different from Bofota et al. (2016) who include social capital in growth model by assuming that social capital affects human capital accumulation, this study assumes that guanxi directly affects human capital. The economic mechanism of growth is based on neoclassical growth theory (Solow, 1956; Swan, 1956; Burmeister and Dobell, 1970; Zhang, 2005). This paper is structurally founded on Uzawa’s two-sector growth model (Uzawa, 1961). Although this paper is built on the basis of the Uzawa framework, we introduce an alternative approach to consumer decision by Zhang (2005) to examine behavior of households. We introduce guanxi to traditional neoclassical growth theory. The rest of the paper is organized as follows. Section 2 defines the basic growth model of economic structure with incorporation of guanxi. Section 3 shows how we can follow the movement of the economic system. Section 4 examines effects of changes in some parameters on economic structural change, guanxi dynamics, and wealth accumulation over time. Section 5 concludes the study. The main results in Section 3 are shown in the Appendix.

2 The growth model with social capital

Our model is influenced by the Solow (1956) one-sector growth model, the Uzawa two-sector growth model, some studies on social capital and guanxi, and the approach to household decision by Zhang (1993). Our economy is composed of capital goods and consumer goods sectors. The two sectors are characterized with neoclassical production functions. All markets are perfectly competitive. Capital and labor are freely mobile between sectors. We extend the traditional two-sector growth model by incorporating guanxi. Human capital is a function of guanxi. Guanxi is built through investment which costs time, consumer goods, and capital goods. The price of capital goods is chosen to be unity. We introduce the following variables:

\( \bar{N} \) — fixed population;

subscripts \( i \) and \( s \) — subscripts for the consumer goods sector and capital goods sector;

\( N_j(t) \) and \( K_j(t) \) — labor force and capital input employed by sector \( j \) at time \( t \);

\( F_j(t) \) — the product level of sector \( j \);

\( T(t), \bar{T}(t), \) and \( \bar{\bar{T}}(t) \) — the representative household’s time spent on work, leisure, and building guanxi, respectively;

\( p(t) \) — price of consumer goods;

\( w(t) \) and \( r(t) \) — wage rate and rate of interest;

\( \Lambda(t) \) — the representative household’s guanxi;
\( \ddot{k}(t) \) — wealth owned by the representative household;  
\( c_i(t) \) and \( c_s(t) \) — consumption levels of capital goods and consumption of consumer goods; and  
\( \delta_k \) and \( \delta_A \) — fixed depreciation rate of physical capital and deterioration rate of guanxi, respectively.

**Total labor supply**

The total labor supply is given by  
\[
N(t) = h(\Lambda(t)) T(t) \tilde{N}, \quad (1)
\]
where \( h(\Lambda(t)) \) is level of human capital which is related to guanxi. We will explain this relation when specifying the function.

**Capital goods sector**

We take the production function of the capital goods sector on the following form  
\[
F_i(t) = A_i K_i^{\alpha_i}(t) N_i^{\beta_i}(t), A_i, \alpha_i, \beta_i > 0, \alpha_i + \beta_i = 1, \quad (2)
\]
where \( A_i, \alpha_i, \) and \( \beta_i \) are parameters. The marginal conditions for the capital goods sector are  
\[
r_\delta(t) = \frac{\alpha_i F_i(t)}{K_i(t)}, w(t) = \frac{\beta_i F_i(t)}{N_i(t)}, \quad (3)
\]
where \( r_\delta(t) \equiv r(t) + \delta_k \).

**Consumer goods sector**

The production function of the consumer goods sector is taken on the following form  
\[
F_s(t) = A_s K_s^{\alpha_s}(t) N_s^{\beta_s}(t), A_s, \alpha_s, \beta_s > 0, \alpha_s + \beta_s = 1, \quad (4)
\]
where \( A_s, \alpha_s \) and \( \beta_s \) are parameters. The marginal conditions are  
\[
r_\delta(t) = \frac{\alpha_s p(t) F_s(t)}{K_s(t)}, w(t) = \frac{\beta_s p(t) F_s(t)}{N_s(t)}. \quad (5)
\]

**Disposable income**

We apply the approach developed by Zhang (1993; 2005) in describing consumers’ behavior. The current income is
\[ y(t) = r(t) \bar{k}(t) + h(A(t)) w(t) T(t), \] (6)

where \( r(t) \bar{k}(t) \) is the interest payment and \( h(A(t)) T(t) w(t) \) is the wage payment. The disposable income \( \hat{y}(t) \) is the current income and the value of wealth

\[ \hat{y}(t) = y(t) + \bar{k}(t). \] (7)

**Time distribution and budget**

Denote the available time for work, building *guanxi*, and leisure by \( T_0 \). The time distribution is given by

\[ T(t) + \bar{T}(t) + \tilde{T}(t) = T_0. \] (8)

The household uses the disposable income to consume goods, to build *guanxi*, and to save. We use \( \omega_s(A(t)) \) and \( \omega_i(A(t)) \) to stand for cost per unit of time in terms of consumer goods and capital goods in building *guanxi*. We will specify function forms of \( \omega_s(A(t)) \) and \( \omega_i(A(t)) \) when simulating the model. It should be noted that within Chinese *guanxi* network *mianzi* (face) and *renqing* play significant role (Hwang, 1987). Chinese face can be roughly considered as social status measured by power, wealth, and social reputation. *Renqing* reflects an even more complicated emotional and economic calculation. It is often referred to the exchange value in terms of public official positions, special favors, accessible to resources, that one often provides to another in the name of gift. In order to use and join in *guanxi* in the long term, this is a social norm that one should follow, especially for joining a long-term, extensive and complicated human network. Chinese proverb says: “Receiving a drop of beneficence should pay back a fountain of beneficence”, and “One day as a teacher should be treated as the father in one’s life.” If one does not pay properly back when using resources within *guanxi*, one should lose *mianzi*. According to Wong (2008: 27), “Guanxi is generally a hierarchically structured network of relationship embedded with mutual obligations through a self-conscious manipulation of *mianzi* (face), *renqing* (favour) and related symbols.” Due to the reciprocity, we should interpret \( \omega_s(A(t)) \) and \( \omega_i(A(t)) \) as net (assumed positive in this study) costs as one gives and receives gifts (Watt, 1999). The household is faced with the following budget constraint:

\[ p(t) c_s(t) + c_i(t) + \omega_i(A(t)) \bar{T}(t) + p(t) \omega_s(A(t)) \tilde{T}(t) + s(t) = \hat{y}(t). \] (9)

Equation (9) shows that the expenditures on the consumption, building *guanxi*, and saving equals the consumers’ disposable income. Substitute (8) into (9)
\[ p(t) c_s(t) + c_i(t) + h(A(t)) w(t) \bar{T}(t) + \omega(t) \tilde{T}(t) + s(t) = \bar{y}(t), (10) \]

where

\[ \bar{y}(t) \equiv (1 + r(t)) \bar{k}(t) + h(A(t)) T_0 w(t), \omega(t) \]
\[ \equiv p(t) \omega_s(A(t)) + \omega_i(A(t)) + h(A(t)) w(t). \]

We interpret \( \bar{y}(t) \) as the maximum disposable income for given wealth and human capital and \( \omega(t) \) as the opportunity cost for building guanxi.

**Utility function and optimal decision**

Utility level \( U(t) \) of the representative household is related to \( c_s(t), c_i(t), \bar{T}(t), \tilde{T}(t) \) and \( s(t) \) as follows:

\[ U(t) = c_s^{\gamma_0}(t) c_i^{\xi_0}(t) \bar{T}^{\sigma_0}(t) \tilde{T}^{\theta_0}(t) s^{\lambda_0}(t), \sigma_0, \theta_0, \gamma_0, \xi_0, \lambda_0 > 0, \]

where \( \gamma_0, \xi_0, \sigma_0, \theta_0, \) and \( \lambda_0 \) are defined as propensities to consume good, to consume capital goods, to use leisure time, to use time for building guanxi, and to hold wealth, respectively. Maximize \( U(t) \) subject to (10)

\[ c_s(t) = \gamma \bar{y}(t) / p(t), c_i(t) = \xi \bar{y}(t), \bar{T}(t) = \sigma \bar{y}(t) / h(A(t)) w(t), \tilde{T}(t) = \theta \bar{y}(t) / \omega(t), s(t) = \lambda \bar{y}(t), (11) \]

where

\[ \gamma \equiv \rho \gamma_0, \xi \equiv \rho \xi_0, \sigma \equiv \rho \sigma_0, \theta \equiv \rho \theta_0, \lambda \equiv \rho \lambda_0, \rho \equiv \frac{1}{\gamma_0 + \xi_0 + \sigma_0 + \theta_0 + \lambda_0}. \]

**Wealth accumulation**

Saving minus dissaving equals the wealth change. In our approach \( s(t) \) is saving and \( \bar{k}(t) \) is dissaving. The following equation describes the change in wealth:

\[ \dot{\bar{k}}(t) = s(t) - \bar{k}(t). (12) \]

**Full employment of capital and labor**

Full employment of the total capital stock \( K(t) \) and labor force implies

\[ K_i(t) + K_s(t) = K(t), N_i(t) + N_s(t) = N(t). (13) \]

**Demand of and supply for two goods**

We have the following equilibrium condition for consumer goods
The equilibrium condition for capital goods as follows
\[ c_i(t) \bar{N} + \omega_i(A(t)) \hat{\bar{N}}(t) \bar{N} = F_i(t) + \hat{k}(t) \bar{N}. \tag{15} \]

**Wealth owned by the households and national output**

All wealth is owned by households
\[ \hat{k}(t) \bar{N} = K(t). \tag{16} \]

We define output per household \( f(t) \) and national output \( Y(t) \) as
\[ Y(t) = F_i(t) + p(t) F_s(t), f(t) \equiv \frac{Y(t)}{\bar{N}}. \tag{17} \]

**Dynamics of social capital**

We propose the following equation for building guanxi
\[ \dot{A}(t) = \frac{u T(t)}{\bar{N}} - \delta_A A(t), \tag{18} \]

where \( u, \chi, \) and \( \alpha \) are parameters. We require \( u \) and \( \alpha \) non-negative. The term \( u \hat{T}^{\alpha s} / \Lambda^{\chi s} \) implies that a rise in time spent on building guanxi augments guanxi. Guanxi accumulation is characterized of decreasing (increasing) of return to scales if \( \chi > (<)0 \).

We built the dynamic growth model with endogenous guanxi.

**3 The Dynamics of the Economy**

The appendix shows that the movement of the national economy can be described by two differential equations with \( z(t) \) and \( A(t) \) as the variables, where \( z(t) \equiv \omega(t)/(r(t) + \delta) \). The following lemma shows how we follow the movement of all the variables of the dynamic system.

**Lemma**

We can determine the movement of \( \dot{k}(t) \) and \( A(t) \) is by the following two differential equations
\[ \dot{A}(t) = \Omega_A(z(t), A(t)), \]
\[ \dot{z}(t) = \Omega_z(z(t), A(t)), \tag{19} \]

where \( \Omega_A \) and \( \Omega_z \) are functions of \( A(t) \) and \( z(t) \) defined in the Appendix. We have all
the other variables as functions of $A(t)$ and $z(t)$ as follows: $r(t)$ and $w(t)$ by (A2) $\rightarrow p(t)$ by (A3) $\rightarrow \dot{k}(t)$ by (A13) $\rightarrow \ddot{y}(t)$ by (A4) $\rightarrow K(t)$ by (16) $\rightarrow N_s(t)$ by (A6) $\rightarrow T(t)$ by (A7) $\rightarrow N(t)$ by (A8) $\rightarrow N_i(t)$ by (A9) $\rightarrow K_i(t)$ and $K_s(t)$ by (A1) $\rightarrow F_i(t)$ by (2) $\rightarrow F_s(t)$ by (4) $\rightarrow c_s(t)$, $c_i(t)$, $\bar{T}(t)$ and $\bar{\dot{T}}(t)$ by (11).

Equations (19) determine the movement of the two state variables, $A(t)$ and $z(t)$. From the procedure in the Lemma we get the values of all the variables at any point of time. We simulate the model by specifying parameter values as follows:

$$
N = 100, T_0 = 24, A_i = 1, A_s = 0.8, \alpha_i = 0.3, \alpha_s = 0.33, \lambda_0 = 0.7, \xi_0 = 0.08,
\gamma_0 = 0.1, \theta_0 = 0.02, \sigma_0 = 0.2, \chi_s = 0.4, u = 0.5, \alpha = 0.4, \delta_k = 0.05, \delta_A = 0.05. \quad \text{(20)}
$$

We measure the size of the population 100. The propensity to consume consumer goods and to consume capital goods are respectively 0.06 and 0.08. The propensity to save is 0.7. The propensity to build guanxi is 0.02. We will change this value to see how a higher propensity for building guanxi affects macroeconomic and microeconomic variables. The depreciation rate of physical capital is fixed 5 percent. The deterioration rate of physical capital is fixed 5 percent. The guanxi building exhibits decreasing return to scale in investment. We specify the human capital function as follows:

$$
h(t) = 0.8 e^{0.2A(t) - 0.1A^{1.2}(t)}.
$$

The relationships between human capital and guanxi is plotted in Figure 1. For low level of guanxi human capital rises in association with increases in guanxi; for high level of guanxi human capital falls as guanxi becomes more complicated. High complexity of guanxi does not enhance human capital as more complicated guanxi may make some firms employ people who are not qualified for jobs, which imply that effective human capital is reduced in the society.
We specify the cost functions as follows
\[ \omega_i(\Lambda(t)) = 0.4\Lambda^{0.6}(t), \quad \omega_s(\Lambda(t)) = 0.5\Lambda^{0.6}(t). \]

It implies that costs rise with decreasing returns to scale as human networks become more complicated. We choose the initial conditions:

\[ z(0) = 0.07, \quad \Lambda(0) = 3.5. \]

The movement of the national economy described in Figure 2. The guanxi and human capital rise. The national output and national labor force rise. The national wealth falls. The wage rate falls and rate of interest rises. The consumer goods sector shrinks and capital goods sector expands. The household spends fewer hours on guanxi building in tandem with rises in costs building in terms of consumer goods and capital goods. The household spends more time on work and less time on leisure. The household’s consumption levels of two goods and wealth fall.
We calculate the equilibrium values of the variables as follows

\[ \Lambda = 4.1, Y = 1765, N = 1091.1, K = 5411, F_i = 930.3, F_s = 700.5, K_i = 2723.5, K_s = 2685, N_i = 587, N_s = 504, h = 1.06, r = 0.05, w = 1.11, p = 1.19, \omega_i = 0.93, \omega_s = 1.17, \ddot{k} = 54.1, c_i = 6.18, c_s = 6.49, T = 10.3, \ddot{T} = 13.2, \dddot{T} = 0.44. \] (20)

the two eigenvalues are respectively \(-0.259\) and \(-0.075\). The equilibrium point is stable. This result is important as it guarantees that we can effectively conduct comparative dynamic analysis.

4. Comparative Dynamic Analysis

We plotted the motion of all the variables in Figure 2. This also means that we can easily plot how the movement of the system is affected if the system is subject to any exogenous change. This section conducts comparative dynamic analysis with regards to some exogenous changes. We introduce a variable \( \Delta x(t) \) to represent for the change rate of the variable \( x(t) \) in percentage due to changes in the parameter value.

4.1. Lower trust in society

Trust is considered an important factor for economic growth. It is closely related to guanxi (Leung, et al. 2005). The deterioration rate of guanxi is enhanced, for instance, people more easily lose mutual trust. We deal with the impact of the following fall in the deterioration rate of guanxi \( \delta_i \): \( 0.05 \Rightarrow 0.055 \). We plot the simulation result in Figure 3. Guanxi becomes weakened. The human capital falls. The household spends more hours on accumulating guanxi and fewer hours on work. Leisure time is slightly affected. The national output, national capital and national output fall. The wage rate and rate of
interest fall. The price of consumer goods slightly changes. The capital goods sector shrinks initially and expands in the long term. The two sectors shrink. Per household wealth and consumption levels of two goods fall. We conclude that lower trust among the population worsen macroeconomic and microeconomic variables. The national economy is harmed by low trust.

Figure 3. Lower Trust in Society

4.2. The propensity to accumulate guanxi rises

In a society like China where guanxi penetrates almost every aspect of Chinese life, people tend to increasingly emphasize guanxi as their life becomes more complicated. One more friend, one more road, as Chinese proverb says. On the other hand, as society evolves, guanxi goes beyond traditional guanxi based on family and close friends. It extends its scale and scope over time, even though the basic determinants are emotional attachments, reciprocal services, and benefits (Yang and Wang, 2011). We can measure this change by allowing change in the propensity to build human relations. We allow the propensity to accumulate guanxi to be enhanced as follows: \( \theta_0: 0.02 \Rightarrow 0.022 \). We plot the simulation result in Figure 4. The guanxi and human capital are increased. The household spends more hours on accumulating guanxi, works more hours, and has less leisure hours. The national output and national labor fall initially and rise in the long term. The national wealth falls. The consumer goods sector expands. The capital goods sector shrinks initially and expands in the long term. The rate of interest and the price of consumer goods rise. The wage rate falls. The costs of establishing human relations become more expensive. Per household wealth and consumption levels of two goods fall. We see that the people consume less and own less wealth, they spend more time and more resources on guanxi building.
Figure 4. The Propensity to Accumulate Guanxi Rises

4.3. Negative effects of guanxi being strengthened

As pointed out by Wang (2007), guanxi is a highly exclusive network within which the members are closely dependent on each other. Only insiders within the guanxi net can use its relational resources, while outsiders can hardly do. Further sophistication of Guanxi nets the society may make the society much less effectively apply its human capital. We deal with the effects of the following change in the human capital function

\[ h(t) = 0.8e^{0.2A(t) - 0.1A^{1.2}(t)} \Rightarrow 0.8e^{0.2A(t) - 0.105A^{1.2}(t)}. \]

The specified change implies that the negative effects of guanxi on guanxi building are strengthened. This happens, for instance, due to a change in social environment, some firms may have a higher propensity to employ people who are not very suitable for the jobs but have close guanxi with the firms’ bosses. This results in reduction of human capital for the economy partly because some people are discouraged to have high human capital. The simulation result is plotted in Figure 5. The guanxi and the human capital fall. The national output, national labor and national capital are all reduced. The two sectors shrink. The rate of interest and the price of consumer goods are slightly affected. The household spends less time on building guanxi and more hours on work and leisure. Per unit of time costs fall. The consumption levels and wealth are reduced. We see that the national economic growth and people’s living conditions suffer from the change.
4.4. The total factor productivity of the capital sector rises

We now study what happen to the economic system when the total factor productivity of the capital sector rises as follows: $A_t: 1 \Rightarrow 1.05$. The result is plotted in Figure 6. The guanxi and human capital are augmented. In the short run the household spends less time on guanxi and leisure and more hours on work; in the long run the household spends more time on guanxi and fewer hours on work and leisure. The national wealth and national output rise. The total labor supply changes slightly. The consumer goods sector shrinks initially and expands in the long term. The capital goods sector expands. The rate of interest rises initially and changes slightly in the long term. The price of consumer goods and wage rate rises. The costs of building guanxi rise. Per household wealth and consumption levels are enhanced in the long term.
Figure 6. The Total Factor Productivity of the Capital Sector Rises

4.5. The cost of establishing guanxi rises

We study the movement of economic system when the cost function of guanxi accumulation in term of capital goods changes as follows

\[ \omega(t) = 0.4A^{0.6}(t) \Rightarrow 0.42A^{0.6}(t). \]

We plot the simulation result in Figure 7. For a given level of guanxi, it costs more for the household to build guanxi in term of capital goods. The guanxi and human capital fall. The household spends fewer hours on guanxi and more hours on leisure and work. The national output, national labor force and national wealth rise initially and fall in the long term. The wage rate and rate of interest rise slightly. The price of consumer goods falls. The capital goods sector expands and the consumer goods sector shrinks. The cost of guanxi in term of capital goods rises and in term of consumer goods falls. The per household wealth and consumption levels of two goods rise initially and fall in the long term.
4.6. A rise in the propensity to accumulate wealth

We allow the propensity to accumulate wealth to be enhanced as follows: \( \lambda_0 \): 0.7 \( \Rightarrow \) 0.71. We plot the simulation result in Figure 8. The household has more wealth and the economy has more capital. The national output and labor force are augmented. The guanxi and human capital are enhanced. The household spends fewer hours on guanxi in the short term and more in the long term. The household spends more hours on work and fewer on leisure. The capital consumer goods sector shrinks initially and expands in the long term. The consumer goods sector expands. The wage rate rises. The rate of interest and price of consumer goods are reduced. The costs of building guanxi are enhanced. The consumption levels of two goods are reduced initially and augmented in the long term.
4.7. Lower return to scale in building guanxi

We deal with the effects when guanxi accumulation has lower return to scale as follows: $\chi: 0.4 \Rightarrow 0.45$. The simulation result is provided in Figure 9. The guanxi and human capital fall. The household spends more hours on guanxi. In the long run the household spends few hours on work and leisure. The national capital, national output, and national output fall. The wage rate rises and rate of interest fall. The price of consumer goods is slightly affected. The two sectors shrink. The household has less wealth and consumes less of the two goods.

Figure 8. A Rise in the Propensity to Accumulate Wealth

Figure 9. Lower Return to Scale in Building Guanxi
5. Conclusions

This paper builds a neoclassical two-sector economic growth model with endogenous, wealth, *guanxi* and human capital in a competitive economy. The model deals with nonlinear dynamic interactions between wealth accumulation, *guanxi* building, human capital change, and economic structural change under perfectly competitive conditions. This study assumes that *guanxi* affects (effective) human capital. To build model costs time, consumer goods and capital goods. We simulate the model. The economic system has a stable unique equilibrium point for the chosen parameter values. We are mainly concerned with the effects of changes in some parameters on the equilibrium and transitional processes of the economic dynamics. We get some insights into interdependence between *guanxi* and economic growth. For instance, if trust deteriorates among member of society which results in a rise in deterioration rate of *guanxi*, then the *guanxi* becomes weakened and the human capital falls; the household spends more hours on accumulating *guanxi* and fewer hours on work; the national output, national capital and national output fall; the wage rate and rate of interest fall; the per household wealth and consumption levels of two goods fall. The society suffers from lost trust. The model of this study is based on many research papers related to economic growth and to Chinese *guanxi*. The study can be extended and generalized in different ways. As pointed out by Badi, *et al.* (2017: 204), “Despite the significance of *Guanxi* networking as the integrated approach to relationship marketing in the Chinese business environment, there remains, however, a limited understanding of structural and relational characteristics of these stakeholder networks, within which value is jointly created and shared.” This study is focused on the dynamics of a highly aggregated variable, *guanxi*. It is desirable to deal with connections by *guanxi* among heterogeneous households and sectors. We can do more comparative dynamic analysis. It is possible to further develop our model on the basis of the vast literature on the Solow model and the Uzawa two-sector growth model.

**Appendix: Proving the Lemma**

We confirm the Lemma. Equations (3) and (5) imply

\[ z = \frac{r_\delta}{w} = \frac{\bar{\alpha}_i N_i}{K_i} = \frac{\bar{\alpha}_s N_s}{K_s}, \quad (A1) \]

in which \( \bar{\alpha}_j = \frac{\alpha_j}{\beta_j}, j = i, s \). Inserting (A1) and (2) in (3), we have

\[ z = \frac{r_\delta}{w} = \frac{\bar{\alpha}_i N_i}{K_i} = \frac{\bar{\alpha}_s N_s}{K_s}, \quad (A1) \]

in which \( \bar{\alpha}_j = \frac{\alpha_j}{\beta_j}, j = i, s \). Inserting (A1) and (2) in (3), we have
\[ r_\delta = \frac{\alpha_i A_i z^{\beta_i}}{\tilde{\alpha}_i^{\beta_i}}, \quad w = \frac{\beta_i A_i \tilde{\alpha}_i^{\alpha_i}}{z^{\alpha_i}}. \quad (A2) \]

From (A1), (4) and (5) we get

\[ p = \frac{\tilde{\alpha}_s^{\beta_s} r_\delta}{\alpha_s A_s z^{\beta_s}}. \quad (A3) \]

We have

\[ \ddot{y} = R \ddot{k} + h T_0 w, \quad (A4) \]

where \( R \equiv 1 + r \). Inserting (11) in (14) yields

\[
\left( \gamma \ddot{\bar{N}} + \frac{\theta \ddot{N}}{\bar{\omega}} \frac{p \omega_s}{\bar{\omega}} \right) \ddot{y} = p F_s. \quad (A5)
\]

Inserting (5) in (A5) yields

\[ N_s = R_s \ddot{y}, \quad (A6) \]

where

\[ R_s(z, \Lambda) \equiv \left( \gamma \ddot{\bar{N}} + \frac{\theta \ddot{N}}{\bar{\omega}} \frac{p \omega_s}{\bar{\omega}} \right) \beta_s. \]

From (8) and (11) we have:

\[ T = T_0 - \frac{\sigma \dot{y}}{h w} - \frac{\theta \ddot{y}}{\bar{\omega}}. \quad (A7) \]

Insert (A6) in (1)

\[ N = T_0 h \ddot{N} - R_N \ddot{y}, \quad (A8) \]

where

\[ R_N \equiv \left( \frac{\sigma \ddot{y}}{h w} + \frac{\theta}{\bar{\omega}} \right) \dot{N}. \]

Equations (13), (A8) and (A6) imply

\[ N_i = T_0 h \ddot{N} - (R_N + R_s) \ddot{y}, \quad (A9) \]

From (13) and (16) we have

\[ \ddot{k} \ddot{N} = K_i + K_s. \quad (A10) \]
Inserting (A1) in (A10) yields
\[ z \ddot{N} = \ddot{\alpha}_i N_i + \ddot{\alpha}_s N_s. \quad (A11) \]

Inserting (A6) and (A9) in (A11) yields
\[ z \ddot{k} = \ddot{\alpha}_i h T_0 - \tilde{R} \dot{y}, \quad (A12) \]

where
\[ \tilde{R} = \frac{\ddot{\alpha}_i R_N + \ddot{\alpha}_s R_s - \ddot{\alpha}_s R_s}{\ddot{N}}. \]

Inserting (A4) in (A12) yields
\[ \ddot{k} = \psi(z, \Lambda) = \frac{\ddot{\alpha}_i h T_0 - h T_0 w \tilde{R}}{z + \tilde{R} R}. \quad (A13) \]

We thus show that all the variables are expressed as functions of \( z \) and \( \Lambda \) at any point in time by the following procedure: \( r \) and \( w \) by (A2) → \( p \) by (A3) → \( \ddot{k} \) by (A13) → \( \dot{y} \) by (A4) → \( K \) by (16) → \( N_s \) by (A6) → \( T \) by (A7) → \( N \) by (A8) → \( N_i \) by (A9) → \( K_i \) and \( K_s \) by (A1) → \( F_i \) by (2) → \( F_s \) by (4) → \( c_{js}, c_t, \bar{T} \) and \( \bar{T} \) by (11). Applying this procedure to (17) and (12) we get
\[ \dot{\ddot{k}} = \Omega_0(z, \Lambda) \equiv \lambda \ddot{y} - \ddot{k}, \quad (A14) \]
\[ \dot{\Lambda} = \Omega_\Lambda(z, \Lambda) \equiv \frac{u \ddot{\bar{T}}^a}{\Lambda \bar{x}} - \delta_A \Lambda. \quad (A15) \]

Taking derivatives of (A13) in time yields
\[ \dot{\ddot{k}} = \frac{\partial \ddot{k}}{\partial z} \dot{z} + \frac{\partial \ddot{k}}{\partial \Lambda} \dot{\Lambda}. \quad (A16) \]

Inserting (A15) and (A14) in (A16) yields
\[ \dot{z} = \Omega_z(z, \Lambda) \equiv \left( \Omega_0 - \frac{\partial \ddot{k}}{\partial \Lambda} \Omega_\Lambda \right) \left( \frac{\partial \ddot{k}}{\partial z} \right)^{-1}. \quad (A17) \]

We confirmed the lemma.

References


CAPITAL FLOWS AND ECONOMIC GROWTH: WHAT ROLES DOES TRADE LIBERALISATION PLAY?

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Abstract

This paper explores by re-examining to what extent trade liberalisation has contributed to the capital inflows (both the private capital inflows and public capital inflow) on economic growth; and their interactive relationship in Nigeria between 1985 and 2018. Time series for each of the variables were collected from secondary sources on yearly basis, extracted from World Development Indicators (WDI) and the variables were measured as percentage of GDP, while Autoregressive Distributed Lag (ARDL) technique is used to show the extent to which the variables were co-integrated and established that both private capital inflows and public capital inflows with the helps of trade liberalization inhibited economic growth in Nigeria. The study further revealed that the coefficient of error correction was negative and highly significant, as well as establishing long-term cointegration. Also, our study affirms partial existence of Bhagwati's hypothesis. Hence, the government needs to restructure and re-engineer most of its trade policies, in order to significantly impact various forms of foreign capital inflows, and subsequently enhance economic growth by creating an enabling economic environment to facilitate adequate inflows of capital inflows.

Key words: Capital inflows, Trade Liberalisation, Economic Growth, Time Series, ARDL.

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1. Introduction

The urge to close the gap between investment and savings in most developing countries becomes imperative, since they are plagued with capital-scarce resources that are needed for their economy to derive. However, neoclassical and endogenous growth theories emphasize that in a capital-scarce economy FDI promotes economic growth both in quantity and in physical investment output (Lucas 1988; Grosman & Helpman 1991; Baro & Salai-I-Martin 1995). Similarly, foreign direct investment is providing long-term capital through new technology, management skills and marketing skills, which in turn increases economic growth through the creation of jobs, increased management skills, technology diffusion, and innovation (see Asiedu, 2002; Paugel, 2007).

From the literature, two major strands of theoretical models have been exploited and have underlined that foreign capital inflows promotes growth in a capital-scarce economy. The neoclassical economic growth theory postulates, among others, that any sustained level of growth is due solely to technology. Solow (1988) stated that it is a growth in which the permanent rate of growth of output per unit of labour input is independent of the saving (investment) rate and depends entirely on the rate of technological progress in the broadest sense. This conclusion flows from a particular kind of equation, called an aggregate production function, and follows from the way Solow combined this function with the fact of depreciation and population growth. On the other hand, endogenous growth theory on the other hand, emphasizes that economic growth is primarily the result of endogenous and not exogenous forces. That is, investment in human capital, innovation, and knowledge (R & D) are significant contributors of growth. The focus of this theory is on positive externalities and spillover effects of a knowledge-based economy which lead to overall economic development.

However, trade and capital flows are conceived as the two engines of globalization and are very important factors in the economic growth process. Hence, the relationship between trade openness, capital formation, foreign direct investment and economic growth has appeared to be positive historically. Empirical studies have produced mixed results on how trade openness and FDI intertwined with growth, both in countries and across the countries (Borenszten et. al, 1998; Mansouri 2005). Thus, Pahlavani et al, (2005) have concluded that FDI as well as trade promote economic development.

In a contrary view Balasubramanyam et al. (1996); Borensztein et al., (1998); De Mello (1999); Lipsey, (2000); and Xu, (2000) all argued that FDI and trade could
adversely influence growth in some countries. Also, Kormendi and Meguire (1985), Barro (1991), Levine and Renalt (1992) concluded that the rate of formation of physical capital affects the rate of economic growth in a country. Kendrick (1993) also stated that capital formation on its own does not result in economic prosperity, but instead the transfer of capital redistribution from the less efficient to the more efficient sectors enhances economic growth. Hence, substantial number of studies documented a positive relationship between foreign capital and economic growth (Osinubi & Amaghionyeodiwe, 2010; Khadraoui, 2012; Odhiambo, 2011), and more so other studies have equally observed either a negative relationship or ambiguous effect of capital inflows on economic growth (see Akinlo, 2004; Burke & Ahmadi-Esfahani 2006; Alfaro et. al., 2001; Shahbaz & Rahman 2010). In another studies conducted by Akinlo (2003); Alege and Ogun (2005) only related the effects of trade to different macroeconomic indicators and sectors of various world economies whereas Uwatt (2004); Orji, Uche and Ilori (2014) relate theirs on growth of less developed countries-LDCs including ECOWAS Members state. However, studies conducted by Abdulai and Jaquet (2002); Akanyo and Ajie (2015); Olaleye (2015); Adegboyega, Odusanya and Popoola (2017) and Saibu (2014) were among the few country specific. But, Adegboyega, et. al., (2017) and Saibu (2014) both gave different submissions on the impact of trade, capital flow and economic growth in Nigeria using a common approach but different theoretical proposals.

Recently, with the use of Pooled Mean Group (PMG) econometric technique, Mowlaei (2018) investigated how different forms of foreign capital inflows (FCIs) including FDI, personal remittances and ODA affect economic growth in 26 top African countries between 1992 and 2016. His result showed that all three forms of FCIs have positive and significant effects on economic growth in the long and short run. However, the personal remittances had the most impact on economic growth in both long and short run. The study therefore, recommends that policy makers should design and implement appropriate fiscal, monetary and trade policies in order to create and improve an enabling environment to attract FCIs as a supplementary source of domestic investment. Also, Adegboyega et. al., (2017) while studying the relation and role of capital flight, especially FDI and aid, through the implementation of the general aggregate production function (APF), using the annual data set covering the period 1980 to 2015. Autoregressive distribution lag (ARDL) cointegrating approach was used to test the linkage between capital flow and trade while the static OLS estimation was used to determine the role played by the variables in relation to economic growth. Foreign direct investment showed a negative relationship, while trade openness, capital stock as measured by gross fixed
capital formation over GDP and labour growth rates showed a positive connection. Furthermore, they revealed that there exists a long-run co-integration relationship between the interest variables of the overall production function. The unidirectional causality from all independent to economic growth has also been identified. Similarly, Shuaib (2014) examined the effects of capital inflow on economic growth and also investigated the role of trade openness in foreign capital inflow/growth nexus in Nigeria. The study used the methodology of Principal Component Analysis (PCA) to derive a single index that shows the quantity and efficiency of traditional capital influx steps, along with openness to trade. The time series properties of the data were analyzed and the bound testing Autoregressive Distributed Lag (ARDL) was used to evaluate time series data. His result showed that when dealing with trade openness, the inflow of capital had a significant effect on economic growth and thus supported the theory of modernity and empirically supports the complementary capital flow and foreign policy.

For the case of Senegalese economy, Adams and Klobodu (2017) investigated the role played by capital flows in the process of growth in the long run. The time frame for the study ranged from 1970 to 2014 and the ARDL serves basis for estimating the long- and short-run relationships between the underlying economic variables. They found from the results that remittances drive the process of economic growth in Senegal in the long run. On the contrary, external debt has a negative impact on economic growth. Their result further revealed that no long run association exists between inflows aid and growth. However, the result of the Quandt–Andrews breakpoint test indicates that year 1991 is the most likely breakpoint location for the remittances–growth model. Sequel to the outcome of the econometrics analysis, the study recommended that both government and other policy makers should focus attention on creating enabling economic environment to facilitate adequate inflows of remittances in order to foster development.

Similarly, relying on autoregressive distributed model (ARDL) for estimating the dynamic model, Waweru and Ochieng (2017) explored the immediate and lagged effects of the various forms of capital flows such as FDI portfolio flows and other investments capital on economic growth in Kenya between 1984 and 2014. They observed from the results that FDI and portfolio investments flows have a negative impact on the GDP growth rate, but their impact is not statistically significant at the conventional 5 percent level of significance. However, other investments flows such as corporate, financial institutions, general government borrowings and remittances from the diaspora all have a significant positive impact on GDP growth rate. However, utilising three-stage least squares (3SLS) which corrects for the
endogeneity of the dependent variables as well as the trade openness variable in the structural equations, and generate unbiased and efficient estimates, Brun and Gnangnon (2017) investigated whether trade openness could be an important driver of financing for development flows, notably development aid (ODA), foreign direct investment (FDI) inflows, and government public revenue, depending on an unbalanced panel dataset comprising 125 countries, of which 37 are Least Developed Countries (LDCs). Their result revealed that trade openness is consistently associated with higher government public revenue, as well as higher development aid inflows. Also, trade openness exerts no significant impact on FDI inflows over the entire sample, but does influence negatively FDI inflows in LDCs and positively FDI inflows in non-LDCs.

Olalaye (2015) investigated the effect of capital flows on economic Growth in Nigeria and attempted to offer evidence on the relationship among real gross domestic product (rgdp), foreign direct investment netflow (fdin), exchange rate (excr) and trade openness (trap). Using Johansen Cointegration test, his study revealed the presence of long-run relationship among the cointegrating variables. The model showed that the statistical significance of all variables with the exception of the FDIN was verified by the exogeneity test. The Granger causality test shows both the existence of one and two-way causality among certain variables. Similarly, Akanyo et. al., (2015) examined the impact of capital flows on the Nigerian economy in a liberalized environment between 1981 and 2012. Using Johansen cointegration test, the paper demonstrated that net capital flow influenced the level of economic growth in Nigeria significantly and positively. Their results indicated that a 1 per cent net increase in capital flows, particularly FDI, would increase economic growth by 3 percent in Nigeria, while the 40 percent growth rate for FDI, which has a constant outflow, would lead to a 40 percent increase in economic growth. A number of factors such as high corruption, political instability, lack of confidence in domestic currencies, etc. leading to capital excess in the economy can explain the lower elasticity of the net flows.

In Tunisia for instance, Hassen and Anis (2012) investigated the impact of foreign direct investment on the economic growth of the host country. The fact has led to this study that, despite the free trading system, the free movement of capital and of commodities, and the global economy has proved to be fully sophisticated and increasingly complex. The study covers the period from 1975 to 2009 for which data were available. Estimates and tests based on modern analysis of time series (stationary tests, co-integration tests, error correction models) model based on that of Akinlo (2004) was constructed. Their findings indicate that FDI may help boost the long term economic growth cycle, and that FDI has a long-term connection to the
variables and that it has a positive relationship to the economic growth which is consistent with Sackey et al., (2012).

In view of the above, it could be concluded that empirical literature in relations to the theoretical paradoxical of the nexus between capital flow and economic growth is inconclusive as some are in support of positive relationship while on the other hand, some reported a negative relationship and besides, some could not trace any relationship or submitted a weak relationship. As such, this difference in divergency of views could be traced to methodology, data selection and analytical tools used in the analysis. In addition this could be attributed to country specific in relations to environment, institutional arrangement, economical, political settings and technological progress in the receiving country of interest of foreign direct investment. Equally, most studies reviewed have only looked at capital inflows without distinguishing which are private capital inflows or public capital inflow, however each of this inflow serves different purpose within the context of economic growth in a country. Also, to the best of our knowledge in Nigeria, no study has yet to test the Bhagwati’s hypothesis, which states that any gains from foreign capital inflows on TFP would surely be dependent on the volume of trade openness of a particular host country.

Therefore, this study tries to reconstruct to what extent trade liberalisation contributed to capital inflows-economic growth nexus in Nigeria between 1985 and 2018, periods of post-financial liberalisation as well as to the Structural Adjusted Program transition policies (SAP). However, the policy of the SAP included the deregulation of the economy, the introduction of new industrial policy in 1989, the establishment of the Nigeria Investment Promotion Commission (NIPC) in early 1990s, and the signing of Bilateral Investment Treaties (BITs) in the late 1990s. Moreover, the technique of co-integration (ARDL) is used for the testing of the long-run equilibrium of variables (Pesaran, Shin & Smith 2001). The rest of the analysis is structured as follows: Section 2 entails methodological examination of the literature, model specification, variable definitions, and data sources. Section 4 reports empirical findings of results and finally concludes the study.

2. Methodology

Following research by Feder (1983); Pagano (1993); Saibu (2014) and Adegboyega et al., (2017), which is a prototype of the endogenous growth model that hinges on the AK model of Solow growth model. Hence, the study adapted the total output feature through the general aggregate production function (APF) model, which is specified as:
where $Y_t$ denotes the aggregate production of the economy (real GDP per capita) at time $t$, $A_t$ is the total factor productivity (TFP) and $K_t$ is the capital stock. Lipsey (2001) observed that the impact of foreign capital inflows on economic growth possibly operates through TFP denoted as $A$ in equation (1). In addition, Bhagwati’s hypothesis stated that, any gains from foreign capital inflows on TFP would surely be dependent on the volume of trade openness of a particular host country. By endogenising all variable of interest, such that is TFP is a function of $FDI$ and $TRAD$. Hence:

$$A_t = f(TRAD_t, FDI_t)$$

Similarly, capital flows in the form of financial capital according to the Lucas paradox and Heckscher-Ohlin-Mundell model can lead to capital and trade substitutability. Therefore, equation (2) can be re-written as

$$A_t = f(TRAD_t, FDI_t, REM_t, ODA_t)$$

Substituting equation (3) into equation (1), we have

$$Y_t = TRAD_t^\sigma, FDI_t^\omega, REM_t^\gamma, ODA_t^\gamma, K_t^\alpha$$

Where: $\sigma, \omega, \gamma$ and $\beta$ were constant elasticity coefficient of output with respect to $TRAD_t$, $FDI_t$, $REM_t$, $ODA_t$ and $K_t$.

Taking the natural logs of both sides of equation (4), we have below an explicit estimable equation as:

$$\ln Y = a + \omega \ln FDI_t + \delta \ln REM_t + \gamma \ln ODA_t + \beta \ln TRAD_t + \epsilon_t$$

The intention of the study is to examine the interaction between trade liberalisation and various forms of capital inflows in the country thereby testing the Bhagwati’s hypothesis. Hence, the model is estimated as follows:

$$PCGDP_t = a_o + \omega_1 \ln FDI_t + \delta_2 \ln REM_t + \gamma_3 \ln ODA_t + \beta_4 \ln TRAD_t + \pi_5 \ln FDI \ast TRAD_t + \sigma_6 \ln REM \ast TRAD_t + \varphi_7 \ln ODA \ast TRAD_t + \epsilon_t$$

where $a_o$ is the constant parameter, and $\epsilon_t$ is the white noise error term.

The measure for capital inflows includes disaggregated variables such net official development assistance (ODA), personal remittance received and foreign direct investment. The variables are measured as percentage of GDP and are extracted from World Development Indicators.
The choice of disaggregated measure of capital inflows is more appropriate as each specific type of flow is unique, especially in terms of taxes couple with the efficiency in tax collection and different degree of expropriation (Aizenman and Noy, 2009) and trade openness (TRAD) is measured, as (imports + exports)/GDP (Kargbo, 2012 and Shuaib, 2014) are used to capture the trade liberalisation. PCGDP is measure as the per capita GDP for Nigeria. However, the expected sign of the parameters $\omega_1, \delta_2, \gamma_3$ and $\beta_4$ are all expected to be positive (i.e $> 0$), while the coefficient of the interaction between trade liberalisation and capital inflows $\pi_5, \sigma_6$ and $\varphi_7$ will depend on the capital inflows type that is considered and confirm the position of the Bhagwati’s hypothesis.

In an attempt to determine the short and long run relationships between capital flows and economic growth. Equation (5) is altered by the implementation of Pesaran et al., (1991) system for ARDL:

$$
\Delta PCGDP_t = \alpha_0 + \omega_1 \ln FDI_t + \delta_2 \ln REM_t + \gamma_3 \ln ODA_t + \beta_4 \ln TRAD_t + \\
\gamma_5 \ln FDI_t \ast TRAD_t + \sigma_6 \ln REM \ast TRAD_t + \varphi_7 \ln ODA \ast TRAD_t + \omega_1 \Delta \ln FDI_t + \\
\delta_2 \Delta \ln REM_t + \beta_3 \Delta \ln ODA_t + \alpha_4 \Delta \ln TRAD_t + \gamma_5 \Delta \ln FDI \ast TRAD_t + \\
\sigma_6 \Delta \ln REM \ast TRAD_t + \varphi_7 \Delta \ln ODA \ast TRAD_t + \epsilon_t
$$

(7)

$\Delta$ denotes the first difference operator.

Using ARDL allows variables of different optimal lags to be employed and as claimed by Bahmani-Oskooee and Hegerty (2010), and Kyophilavong et al (2013), unlike the conventional Johansen cointegration approach which requires variables to be integrated of the same order, the ARDL bound tests for cointegration can be applied to variables irrespective of whether they are I(0) or I(1) or mutually cointegrated. This methodology, in addition to other benefits already mentioned, allows researchers to explore correct dynamic structure. It allows for inferences on long-run estimates which are not possible under alternative co-integration procedures. Finally, ARDL model can accommodate greater number of variables in comparison to other Vector Autoregressive (VAR) models (Pesaran & Shin 1995). For a country specific study, the usual problem of data comparability, measurement issue and consistency do not arise in this case. All the variables are as defined in and sourced from the World Development Index (WDI) while all variables are expressed in log form.
3. Results, Outcomes and Conclusion of the study

Table 1

<table>
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<tr>
<th></th>
<th>PCGDP</th>
<th>ODA</th>
<th>FDI</th>
<th>REM</th>
<th>TRAD</th>
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<td>4.41E+08</td>
<td>2.75</td>
<td>3.646945</td>
<td>71.7944</td>
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<td>3425.569</td>
<td>1.27E+10</td>
<td>10.8</td>
<td>13</td>
<td>91.30857</td>
</tr>
<tr>
<td>Minimum</td>
<td>1151.126</td>
<td>1.20E+08</td>
<td>0.637</td>
<td>0.00859</td>
<td>61.74737</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>588.8969</td>
<td>2.47E+09</td>
<td>2.235872</td>
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<td>3.360817</td>
<td>4.16646</td>
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<td>264.1357</td>
<td>30.05175</td>
<td>5.669035</td>
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<td>0</td>
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<tr>
<td>Sum Sq. Dev.</td>
<td>10750786</td>
<td>1.89E+20</td>
<td>154.9728</td>
<td>392.5173</td>
<td>1522.191</td>
</tr>
<tr>
<td>Observations</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
</tbody>
</table>

Source: Authors’ Computation (2019).

Table I shows the descriptive statistics of the variables employed in the analysis. The data revealed the mean values of economic growth (PCGDP), net official developmental assistance (ODA), foreign direct investment (FDI), remittance received (REM) and trade liberalisation (TRAD) as 1747.0, 0.000000014, 3.247, 4.082, and 71.237, compared to the median values of 1353.0, 0.00000044, 2.75, 3.646 and 71.79 respectively. However, all the variable of interest was positively skewed. In addition, the Kurtosis result ODA, FDI, REM and TRAD were leptokurtic, since the p-values were more than 3 while only PCGDP was platykurtic, since the p-value is less than 3.

Furthermore, the Jarque-Bera statistics shows that the series is normally distributed since the p-values of all the series are not statistically significant at 5% level. Thus, we have to accept the alternate hypothesis that says each variable is normally distributed.

Table 2

Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>PCGDP</th>
<th>ODA</th>
<th>FDI</th>
<th>REM</th>
<th>TRAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCGDP</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ODA</td>
<td>0.3640954</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FDI</td>
<td>-0.383432</td>
<td>-0.0577534</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>REM</td>
<td>0.427749</td>
<td>0.68221164</td>
<td>0.14197913</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>TLIB</td>
<td>0.7121768</td>
<td>0.26129057</td>
<td>-0.1050075</td>
<td>0.568757</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Authors’ Computation (2019).

Table 2 presents the correlation coefficients of gross domestic product per capita (PCGDP) net official developmental assistance (ODA), foreign direct investment (FDI), remittance (REM) and Trade liberalisation (TRAD). The results show that none of the correlation coefficient in the table was perfectly correlated.

Table 3

Relationship between Capital Flows, Economic Growth and Trade Liberalisation

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model I</th>
<th>Model II</th>
<th>Model III</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C</td>
<td>3.7698 (4.8633)**</td>
<td>15.778(3.8283)**</td>
</tr>
<tr>
<td></td>
<td>LODA</td>
<td>0.1253 (4.8372)**</td>
<td>-0.2508(3.5171)**</td>
</tr>
<tr>
<td></td>
<td>LFDI</td>
<td>-0.1727(-48958)**</td>
<td>0.2478(3.6566)**</td>
</tr>
<tr>
<td></td>
<td>LREM</td>
<td>0.01702(1.2730)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LTRAD</td>
<td>1.2545(4.4958)**</td>
<td>0.2477(4.2578)**</td>
</tr>
<tr>
<td></td>
<td>FDI*TRAD</td>
<td>-0.1639(-3.6182)**</td>
<td>0.00048(1.7954)</td>
</tr>
<tr>
<td></td>
<td>ODA*TRAD</td>
<td>0.1780(6.0295)**</td>
<td>-15.5948(3.7871)**</td>
</tr>
<tr>
<td></td>
<td>REM*TRAD</td>
<td>0.0255(1.4988)</td>
<td>-0.0036(-3.9658)**</td>
</tr>
<tr>
<td>R²</td>
<td>0.87</td>
<td>0.79</td>
<td>0.92</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.86</td>
<td>0.76</td>
<td>0.90</td>
</tr>
<tr>
<td>F-Stat</td>
<td>48.7858 (0.000)</td>
<td>35.37 (0.0000)</td>
<td>52.51 (0.0000)</td>
</tr>
<tr>
<td>D.W</td>
<td>1.5678</td>
<td>1.6782</td>
<td>1.72</td>
</tr>
</tbody>
</table>

Source: Authors’ Compilation (2019).
Value in (**) implies t-Statistics @ 5% significant level
Note @ Model I: Without Interative variables
II: Only Interactive variables
III: With Interactive variables
Table 3 presented the estimates of interactive behaviour of trade liberalisation on capital inflows and economic growth using ordinary least square.

From model I, it was revealed that only the Remittances were considered to be negligible among the portion of capital inflows, whereas the amount of FDI and official development assistance was important at 5%. Trade liberalization (TRAD) also proved to be relevant at a level of 5% while foreign direct investment (FDI) and net official development assistance (ODA) proved to be important at a 5% level. Trade liberalization (TRAD) also played an important role at the 5 percent level.

Moreso, the result was found to be highly positive relationship between the ODA (Other Development Asset) and the trade liberalisation of economy growth. As a result, a 1% rise in gross domestic product per person leads to an increase in net official developmental assistance (ODA) and trade liberalization (TRAD) of 12.5 percent and 125.45 percent, respectively. In addition, a 1 percent rise in the gross domestic product per capital contributed to a 17.2 percent decline in FDI. This corroborates the study conducted by Waweru & Ochieng (2017). As part of our main contribution, what role does the trade liberalisation play in the capital inflows-economic growth nexus in Nigeria. Based on the literature, the component of capital flows identified and used in this study are FDI\textit{TRAD}, ODA\textit{TRAD} and REM\textit{TRAD}. From model II, we observe that the interaction between capital inflows and trade liberalisation is positive for ODA\textit{TRAD} and negative for FDI\textit{TRAD} and are found to be statistically significant at 5 percent while REM\textit{TRAD} was positive but insignificant, the positive nexus collaborates with the studies by Sakyi (2011), which also affirm the Bhagwati's hypothesis whereas the negative relationship is also evidence of the studies conducted by Akinlo (2004); Shahbaz and Rahman (2010) but failed to align with Bhagwati's hypothesis. By implication, the remittances received by REM\textit{TRAD} have not been a conduit for the productive economic sector which can stimulate growth rather than likelihood that such remittances received were used for consumption purposes.

From model III, we observed that the results were significant at 5 percent except for the interactive behaviour of foreign direct investment and trade liberalisation on gross domestic product per capita. It was further observed that positive relationship exist between ODA and per capital GDP i.e. one percent increase in net official development assistance would result to an increase in per capita GDP by 15.7 percent. Similarly, one percent increase in REM and TRAD would bring about a percentage increase in per capita GDP by 24.78 and 25 percent respectively.

Equally, the interactive behaviour between ODA\textit{TRAD} and REM\textit{TRAD} was found to exhibit a negative relationship and statistically significant. Thus, this implies that one percent increase in ODA\textit{TRAD} would results to one percent decrease
in per capita GDP by 15.59 percent and similarly, one percent increase in REMTRAD would result to one percent decrease in per capita GDP.

**Cointegration Bound Test**

Therefore, autoregressive distributed lag model (ARDL) was employed to estimate the regression.

**Table 4**

*Results of ARDL Cointegration Test*

<table>
<thead>
<tr>
<th>Test Statistics</th>
<th>Value</th>
<th>Lower bound @ 5%</th>
<th>Upper bound @ 5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-Statistic</td>
<td>3.81872</td>
<td>2.32</td>
<td>3.5</td>
</tr>
</tbody>
</table>

*Source: Authors’ Computation (2019).*

Table 4 displays the effects of the boundary checking co-integration. Due to the 2.32 and 3.50 lower and upper bond test statistics at 5% significance, measured F-statistics of 3.81872 are higher than the upper band test, which indicates that the variables in the model have a long-lasting relationship.

**Table 5**

*Statistical Output for the Short Run Estimate*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>D(FDI)</td>
<td>0.249985</td>
<td>0.183417</td>
<td>1.362931</td>
</tr>
<tr>
<td>D(FDITRAD)</td>
<td>-0.003818</td>
<td>0.002748</td>
<td>-1.389623</td>
</tr>
<tr>
<td>D(FDITRAD(-1))</td>
<td>0.00013</td>
<td>0.000137</td>
<td>0.946438</td>
</tr>
<tr>
<td>DLOG(ODA)</td>
<td>0.216041</td>
<td>0.08716</td>
<td>2.478659</td>
</tr>
<tr>
<td>DLOG(ODA(-1))</td>
<td>-0.250403</td>
<td>0.086904</td>
<td>-2.881384</td>
</tr>
<tr>
<td>D(ODATRAD)</td>
<td>0.000000</td>
<td>0.000000</td>
<td>-1.171459</td>
</tr>
<tr>
<td>D(ODATRAD(-1))</td>
<td>0.000000</td>
<td>0.000000</td>
<td>2.826502</td>
</tr>
<tr>
<td>D(REM)</td>
<td>-0.022491</td>
<td>0.066887</td>
<td>-0.336249</td>
</tr>
<tr>
<td>D(REM(-1))</td>
<td>-0.064024</td>
<td>0.065465</td>
<td>-0.977991</td>
</tr>
<tr>
<td>D(REMTRAD)</td>
<td>0.000868</td>
<td>0.001018</td>
<td>0.84853</td>
</tr>
<tr>
<td>D(REMTRAD(-1))</td>
<td>0.001034</td>
<td>0.000856</td>
<td>1.207468</td>
</tr>
<tr>
<td>D(TLIB)</td>
<td>0.020016</td>
<td>0.010056</td>
<td>1.990454</td>
</tr>
<tr>
<td>D(TLIB(-1))</td>
<td>-0.018451</td>
<td>0.009298</td>
<td>-1.984446</td>
</tr>
<tr>
<td>ECM(-1)</td>
<td>-1.137785</td>
<td>0.33378</td>
<td>-3.408786*</td>
</tr>
</tbody>
</table>

*Source: Author’s computation (2019).*
Table 5 shows a negative and statistically important error correction coefficient at 5 percent significance point. This however indicates the existence of a short-run relationship in the model and shows that the pace of short-run change is 113.778 percent. On the one side, the existence of a large error term indicates that causality runs in at least one direction, which supports by Granger (1986) and similarly, Bannerjee et al., (1998) noted that a highly significant error correction term signifies a stable long run relationship among variable of interest.

**Table 6**

Estimates of Long Run Coefficient using ARDL

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-1.753949</td>
<td>0.666803</td>
<td>-2.630384**</td>
</tr>
<tr>
<td>FDI</td>
<td>0.828292</td>
<td>0.243118</td>
<td>3.406953**</td>
</tr>
<tr>
<td>FDI*TRAD</td>
<td>-0.012336</td>
<td>0.003542</td>
<td>-3.483289**</td>
</tr>
<tr>
<td>LODA</td>
<td>0.276867</td>
<td>0.04461</td>
<td>6.206454**</td>
</tr>
<tr>
<td>ODA*TRAD</td>
<td>0.000000</td>
<td>0.00000</td>
<td>-2.714696**</td>
</tr>
<tr>
<td>REM</td>
<td>-0.061669</td>
<td>0.06357</td>
<td>-0.970093</td>
</tr>
<tr>
<td>REM*TRAD</td>
<td>0.000945</td>
<td>0.000902</td>
<td>1.047683</td>
</tr>
<tr>
<td>TRAD</td>
<td>0.052819</td>
<td>0.014944</td>
<td>3.534441**</td>
</tr>
</tbody>
</table>

*Source: Author’s Computation (2019).*

** signifies 5% significant level

Table 6 shows that only remittances are not relevant among interested variables, even when they interacted with trade liberalisation in the long run. The implication of this could be attributed to the extent to which the funds are being put into and used by the recipients of such funds. However, foreign direct investment (FDI), net official developmental assistance (ODA) and trade liberalisation (TRAD) exhibits a positive relationship with economic growth and found to be statistically significant which is in line with the study conducted by Osinubi & Amaghionyeodiwe (2010); Kh德拉ouui (2012); Waweru & Ochieng (2017). However, the interactive role between net official development assistance (ODA) and trade liberalisation (TRAD) shows positive and statistically significant relationships with economic growth, which supported the Bhagwati's hypothesis, while there are negative and statistically significant relationship between trade liberalisation and foreign direct investment.
Table 7

Statistical Output for Diagnostic Check

<table>
<thead>
<tr>
<th>Test Name</th>
<th>F-Statistics</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normality</td>
<td>18.145</td>
<td>0.0001</td>
</tr>
<tr>
<td>Serial Correlation LM</td>
<td>1.19196</td>
<td>0.3665</td>
</tr>
<tr>
<td>ARCH test</td>
<td>0.061861</td>
<td>0.8055</td>
</tr>
<tr>
<td>Heteroscedasticity</td>
<td>0.229629</td>
<td>0.9968</td>
</tr>
</tbody>
</table>

Source: Authors’ Computation (2019).

The diagnostic test is presented in Table 7 and shows that the model is free of both serial correlation and heteroskedasticity problem.

![Figure 1. CUSUM Stability Test](image)

The Ramsey reset test shows that the model has an error problem. However, as the blue line in Figure 5.1 is within the borders and does not override the critical
boundaries, the CUSUM recursive test confirms a reasonably high degree of stability for the model relationship, which indicates that the model is correctly specified and the long-term coefficients are stable. Hence, the estimated models passed all diagnostic tests against heteroscedasticity (ARCH test), serial correlation (Breusch-Godfrey test), normality (Jarque-Bera test), and function form errors (Ramsey regression equation specification error test (RESET)).

In view of the above findings, we were able to establish that both private capital inflows and public capital inflows with the help of trade liberalisation inhibited economic growth in Nigeria. For examples, foreign direct investment (FDI), net official developmental assistance (ODA) and trade liberalisation (TRAD) exhibit a positive relationship with economic growth and found to be statistically significant. If trade liberalisation interacted only with net official development assistance is found to be positive, whereas trade liberalisation with foreign direct investment is found to be negative and statistically significant.

These outcomes are insightful because, even the one with positive coefficient do not enhance economic growth and by implication it shows that the various forms of trade liberalisation policy embark upon by the Nigeria government had not significantly attract more of the foreign capital inflows, which could be as a result of many factors among which are corruption, bureaucratic nature of government in the country etc.

Furthermore, when remittances and trade liberalisation were interacted, we found it to be insignificant. This only signal the fact that remittance received had not been channelled to the productive sector of the economy which ought to stimulate growth rather than probability, and those remittances received had been used for consumption purposes. Furthermore, we were able to corroborate partial Bhagwati's hypothesis in Nigeria which state that, any gains from capital inflows on TFP would surely be dependent on the volume of trade openness of a particular host country.

It is however, imperative that the Nigerian government should ensure that with its huge number of people residing outside the shore of Nigeria, the huge inflows of remittances need to be monitors and channels to productive sector of the economy so as to boost the economic activities of the country. Similarly, the government needs to restructure and re-engineer most of its trade policies, in order to significantly impact various forms of foreign capital inflows, and subsequently enhance economic growth by creating an enabling economic environment to facilitate adequate inflows of capital inflows.
References


TRANSMISSION MECHANISM OF GLOBALIZATION AND ITS IMPACT ON HUMAN WELFARE DEVELOPMENT IN SUB-SAHARAN AFRICAN COUNTRIES

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JEL: E14, F13, F62, I31

Abstract

The increased intensity of globalization across borders integrated the sub-Saharan African (SSA) countries into the world economy as shown by the increasing degree of trade openness (from 55.4% in 1980–1984 to 65.6% in 2000–2015) and foreign direct investment as a percentage of GDP (from 0.3% in 1980–1984 to 2.85% in 2000–2015). The quality of life of the people in the region improved marginally regarding access to basic needs. However, the effects of globalization on access to basic needs such as water, sanitation, healthcare services have received little attention. Thus, this study investigates the impact of globalization on human welfare in sixteen SSA countries over the period 1980-2015. Using a panel fixed effect approach, the findings revealed that globalization through its various channels (trade openness, capital and financial flows and labour mobility and information technology), improves human welfare indicators in sub-Saharan Africa. However, the low level of good governance in the region deteriorates the development of human well-being. Thus, there is a need to improve the quality of governance to enhance the welfare of the people through global interactions.

Key words:

globalization, human welfare, basic needs, quality of governance, Sub-Saharan Africa.

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1. Introduction

All countries in the world have become more linked together through globalization over the last three decades. This cooperation among nations has however turned the players into one big international market. The interaction of various players in the international market has transformed the world into a global village which had proved to be successful in all ramifications. The success story is not limited to economic outlooks but also covers socio-political viewpoints, technological advancement and cultural settings of nations and social groups. The benefits also assisted countries in adopting policy measures and formulating programmes that were aimed towards alleviating poverty and improving the welfare of citizens. However, globalization has brought along with it a large number of economic disorders which have worsened human well-being.

In the Sub-Saharan Africa (SSA) region, the primary goals of the economic reforms since the 1980s have been to reduce structural vulnerability by the integration of trade, capital flows as well as social contacts into the world economy to ensure sustained growth, poverty reduction and human welfare improvements. Regardless of the extended period of economic reforms, in SSA, the majority of her population are still living in abject poverty. The region has not been able to half the total number of poor people in the region as predicted in the Millennium Development Goals (MDGs). From a statistical point of view, the World Bank Development Indicators (2019) revealed that poverty headcount ratio at $1.90 per day fell from 58.4% in 1999 to 50.9%, 46.6% and 42.3% in 2005, 2010 and 2015 respectively. It means that the region only achieved a small reduction in poverty headcount. Likewise, the United Nations Development Programmes (UNDP, 2006) reports that consumption of goods and services in Africa recorded a decline of about 20% between 1975 and 2005. The per capita private consumption of SSA grew at a low average rate of about 1.2% within the periods, 1980-2006 compared to the average values of 1.6% for Latin America and the Caribbean, 2% for South Asia and 5.6% for East Asia and the Pacific (UNDP, 2007; World Bank Report, 2007). With the aim of reducing the number of people in extreme poverty, African countries have introduced different policy reforms1 in more fundamental matters such as market deregulation, trade liberalisation and public sector restructuring, including privatisation, but all have not solved human welfare crises.

As a result of this significant discussion, the study makes enquiries on the following questions: What is the effect of trade openness on human welfare changes in SSA countries? What has been the effect of capital and financial flows in SSA
countries on the citizens’ well-being? Has each of the labour mobility and information flows impacted significantly on the wellbeing of people in SSA over the past four decades? We seek to understand the causal links between globalization and human welfare development across sixteen sub-Saharan African countries for a period of 1980 to 2015. Unlike the study of Ogwumike, Maku and Alimi (2018), this study extends the frontier of knowledge by examining the effects of major globalization indices (trade openness, capital and financial flows, labour mobility and information flows) on human welfare measures of 16 SSA countries. Furthermore, we decompose human welfare measures into five, which are: access to basic human necessities (i.e. access to basic healthcare services, basic drinking water, and sanitation), mean years of schooling, child mortality, human longevity and human development index respectively and also estimate how they are affected by globalization. The remaining sections are in four parts. The next section provides a brief overview of the literature on the relationship between globalization and human welfare. In the third section, the study presents the estimable model and estimation techniques. The fourth section shows the empirical results and discussions, while the last part concludes with some policy implications.

2. Brief Review of Literature

Empirically, many studies exist on the linkage between globalization and various economic development indicators, but only a few focused on the precise linkage between globalization, poverty and welfare changes. We reviewed some empirical literature closely related to our study, ranging from the panel, cross-sectional and time-series data studies. Santarelli and Figni (2002), using narrative techniques and an unrestricted linear regression model, investigated whether globalization reduces or escalates poverty in selected developing countries. They found that financial openness, though not statistically significant, is positively linked to poverty, while trade openness tends not to affect relative poverty. However, financial openness does significantly affect relative poverty. Heshmati (2003) investigated the relationship between income inequality and globalization in selected developing economies. Using a pooled ordinary least square (OLS), the author observes that the low rank of the globalization process is due to political and personal factors which developing countries have limited possibility to affect. He posits that globalization indices explain 7 to 11% of income inequality among the developing countries. Hammoris and Kai (2004) addressed the precise relationship between globalization, financial deepening and inequality for the entire SSA region between 1980 and 2002 using the unbalanced panel regression technique. The study revealed that globalization reduces
disparities in income and its impacts depend on the level of development of the country. Also, globalization adversely affects the equalizing effects of financial depth, although it helps reduce inequality in SSA.

Guordon, Maystre and Melo (2008) follow the path of Hammoris and Kai (2004) methodologically and also challenge other earlier empirical studies on developing countries such as Santarelli and Figni (2002) and Heshmati (2003). The authors used the panel regression analysis to establish the link between openness, inequality, and poverty for selected developing countries. The study revealed consistent evidence that the conditional effects of trade liberalisation on income differences correlate with relative factor endowment. Heinrich (2009) evaluates the impact of national symbols and globalization on the wellbeing of 88 selected developing countries. The finding revealed that conventional determinants of production affect national welfare measured by human development index (HDI). The effects of national symbols on HDI are unstable while those of globalization are strong with social globalization having the most substantial impacts.

Niyongabo (2005) investigates the relationship between financial liberalization (measured by private investment) and economic growth for a panel study of 102 countries which also included 30 SSA countries. The findings indicated that financial liberalization has a direct association with real income per capita. Oduh (2012) also reported similar results for Nigeria using the same measures. Using foreign direct investment as a measure of financial openness, Kumar and Pacheco (2012) and Shahbaz (2012) revealed that financial openness improves human welfare in Kenya and Pakistan respectively. The findings were in tandem with the results of Roine, Vlachos, and Waldenstrom (2009) conducted for a study sample of 16 developing countries. Nevertheless, some studies like Obadan and Okojie (2012) and Ahmad (2014) refuted the positive relationship between financial openness and human welfare in SSA countries. For instance, Ahmad (2014) using a generalised method of moments (GMM) approach for a panel study of 21 SSA countries found an adverse effect of financial openness on economic growth. The differences in their empirical findings come from the employed measures of human welfare and estimation techniques.

In a more extensive analysis of human welfare effects of other measures of globalization such as labour mobility and information flows, only very few empirical studies (Khor, 2002; Niyongabo, 2005; Popkin, 2006; Dreher, 2006; Dreher and Gaston, 2006; Dreher et al., 2008; Abbott and Coenen, 2008; Maertens, Colen and Swinnen, 2009; Ogwumike and Maku, 2012; Shahbaz, 2012; Hismmangolu, 2012; and Elgin et al., 2013; Ogwumike, Maku and Alimi, 2018) were found to explore
related dimensions of this globalization component. A sample of 184 cross-country analyses by Dekimpe, Paker, and Sarvary (2000) reveal that the cellular telephone enhanced welfare growth rate. Also, in a survey of 30 SSA countries, Niyongabo (2005) noted that telephone users have a significant and positive effect on human welfare development measured by GDP per capita growth between 1970 and 2000. Abbott and Coenen (2008) revealed that globalization and advances in information and communication technology (ICT) brings about innovation and opportunities in health care delivery as a measure of human welfare. In a single country study of China, Segal (2008) indicated that science and technology enhance income equality. In another study on the impact of globalization and information technology on language education policy in Turkey, Hismmangolu (2012) contended that ICT flow exerted a positive effect on the English Language development as a measure of educational progress that constitutes a component of human welfare development in Turkey. Similarly, Neculita and Moga (2012) demonstrated that the main driving force for better human welfare development across countries is through technological progress, information, communication, and transport.

In the case of labour flow, the findings of Osabuohien (2007), Maertens et al. (2009), and Shahbaz (2012) revealed that globalization through labour market participation has a positive impact on human welfare. In addition, Gindling and Terrell (2010) examined the nexus among minimum wage, globalization, and poverty in Honduras and reported that high minimum wage rate alleviates poverty. Also, Shahbaz (2012) stated that skilled labour has a significant effect on real GDP per capita growth rate in Pakistan. A plausible explanation for the contradiction in the findings is the small sample size and difference in adopted proxy for labour flow. In recent time, the effectiveness of governance and the rule of law have been found to be significant determinants of welfare. A recent study by Ogwumike, Maku and Alimi (2018) conducted a regional analysis of the links between globalization and human welfare for sixteen SSA countries within the period, 1980-2014. They employed the panel fixed effect approach and found that human welfare development and access to adequate infrastructure are enhanced by trade openness for the four regions. The study discovered that FDI only enhances human welfare in Southern and Eastern African regions. In the Southern part of Africa, the authors found that the high level of social globalization resulted in improved human welfare changes. In the end, the high migration level of workers causes deterioration in welfare development and basic infrastructures in the region. After assessing the relevant studies in the body of existing literature, we discovered that their findings can best be described as inconclusive. Also, it was noticed that existing studies on the links between
globalization mechanism and human welfare in SSA was conducted on a regional basis (see Ogwumike, Maku and Alimi, 2018). This study deviates from the available literature by establishing the links between globalization transmission mechanisms and human welfare development for SSA countries altogether. This study, therefore, tests the null hypothesis below:

\[ H_0: \text{Globalization transmission mechanism has no significant impact on human welfare development in SSA countries.} \]

3. Methodology

3.1. Analytical Framework and Model Specification

This study adapts the exogenous growth theory which states that external variables are responsible for changes in output growth in an economy. The underlying assumption is that economic prosperity is mainly determined by independent and external factors contrary to interdependent or internal factors. These external factors are savings rate, diminishing capital return and technological progress. This study, therefore, hinges on the Solow’s (1956) exogenous growth model for building the empirical model of the relationship between globalization and human welfare changes in SSA countries. We utilize the Solow growth model for three reasons: (a) it is easy to modify and estimate compared to other endogenous growth models (Bernanke and Gürkaynak, 2002; Greiner, Regal, and Jin, 2004); (b) the model is also famous as any other endogenous model as there is no compelling evidence that they performed better than the Solow model (Parente, 2001; Solow, 2000); and (c) other types of growth models also employed its framework as it possesses the features of a balanced growth path (Bernanke and Gürkaynak, 2002). The model adopted for this study emanates from the theoretical model of Maku (2015) (which) stated:

\[ \ell^{HDI} = A_0 K^\beta \ell^{\eta q + \delta n t} \]  

(1)

Where: \( \ell \) is exponential, \( HDI \) is human development index, \( A \) is technological progress or multi-factor, \( K \) is physical capital, \( q \) is the vector of transmission mechanisms of globalization, and \( \beta, \eta, \delta, n, t \) are parameters.

The above equation represents the theoretical model for this study to investigate the effect of globalization on human welfare changes. Equation (1) shows that \( q \), that is, a vector of transmission mechanism sub-channels which is exogenously determined. The study then incorporates globalization measured by trade openness (TRD), capital flow measured by portfolio investment (PFI) and foreign direct
investment (FDI), technology measured by information and communication technology (ICT) and labour mobility measured by migration of labour (LBM). Previous studies have also considered governance as one of the components of vector $q$ that influence human welfare. For instance, Prasad et al. (2004) and Harrisson (2006) recognized good governance index (GGI) as an essential factor that explains the capital flow-growth-human welfare nexus. Incorporating all these factors into equation (1), it becomes:

$$ \ell^{HDI} = A_0 K^\beta \ell \sum \eta^{\ln(TRD, PFI, FDI, LBM, ICT, GGI)+\delta t} $$

The value of $n$ is used to measure population growth rate of social welfare which is presumed to be equal to the exogenous growth rate of labour, whereas $t = 1$. More so, $K$ is capital-output ratio measured as the percentage share of gross fixed capital formation to gross domestic product (FCF). The equation becomes:

$$ \ell^{HDI} = A_0 FCF^\beta \ell \sum \ln(TRD, PFI, FDI, LBM, ICT, GGI)+\delta t $$

The above mathematical equation revealed the exponential growth model used for analysing the impact of globalization on human welfare changes in SSA. Taking the logarithm of both sides of the equation, the model is specified in a linear panel form to capture both country and time effect.

$$ HDI_{it} = a_0 + \beta \ln FCF_{it} + \eta_1 \ln TRD_{it} + \eta_2 \ln PFI_{it} + \eta_3 \ln FDI_{it} + \eta_4 \ln LBM_{it} + \eta_5 \ln ICT_{it} + \eta_6 \ln GGI_{it} + \delta n_{it} + u_{it} $$

Where: $a_0 = \ln A_0, \beta, \eta_{1-6}$ are parameters; and human welfare index and indices of access to basic needs indices were regressed on the essential components of globalization. The welfare index variables were life expectancy at birth (LEI), infant mortality rate (IMR) and mean years of schooling of adults (MYS). The indices of access to basic needs were improved water (% of the population with access) (WAT), improved sanitation facilities (% of the population with access) (SAN) and health care services (% of the population with access) (HCS).

### 3.2. Estimation Techniques

The study adopted the fixed effects estimation technique to estimate the relationship between the variables specified in our panel model (4). The choice of this
estimation technique resulted from its assumption that the unobserved effects vary between countries (i.e., heterogeneous) rather than a random term as assumed using the random effects technique. The cross section weights (a feasible GLS specification considering the presence of cross-section heteroskedasticity) was taken to correct for cross-section heteroskedasticity and autocorrelation of idiosyncratic disturbance. It ensures that the fixed estimator is efficient and consistent for analysing this study as used by earlier empirical studies like Hammos and Kai (2004), Guordon et al. (2008), Heinrich (2009), among others. To precisely ensure the efficiency of the fixed effects estimator, the Hausman test is estimated to determine the best efficient estimator between fixed and random effects.

Table 1

Descriptive Statistics for SSA Pooled Data

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Max</th>
<th>Min</th>
<th>Std. Dev.</th>
<th>Obs.</th>
<th>Cross Sections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human Development Index (HDI)</td>
<td>40.38</td>
<td>73.70</td>
<td>16.35</td>
<td>13.48</td>
<td>560</td>
<td>16</td>
</tr>
<tr>
<td>Life Expectancy Index (LEI)</td>
<td>53.05</td>
<td>74.52</td>
<td>26.76</td>
<td>7.65</td>
<td>560</td>
<td>16</td>
</tr>
<tr>
<td>Infant Mortality Rate (IMR)</td>
<td>82.52</td>
<td>169.60</td>
<td>12.80</td>
<td>34.69</td>
<td>560</td>
<td>16</td>
</tr>
<tr>
<td>Mean Year of Schooling (MYS)</td>
<td>3.09</td>
<td>8.90</td>
<td>0.50</td>
<td>2.04</td>
<td>560</td>
<td>16</td>
</tr>
<tr>
<td>Access to Sanitation (SAN)</td>
<td>31.67</td>
<td>92.14</td>
<td>3.16</td>
<td>22.53</td>
<td>560</td>
<td>16</td>
</tr>
<tr>
<td>Access to Water (WAT)</td>
<td>61.15</td>
<td>99.80</td>
<td>25.22</td>
<td>19.44</td>
<td>560</td>
<td>16</td>
</tr>
<tr>
<td>Health Care Service (HCS)</td>
<td>49.94</td>
<td>84.40</td>
<td>18.22</td>
<td>11.81</td>
<td>560</td>
<td>16</td>
</tr>
<tr>
<td>Trade Openness (TRD)</td>
<td>61.09</td>
<td>137.11</td>
<td>6.32</td>
<td>26.88</td>
<td>560</td>
<td>16</td>
</tr>
<tr>
<td>Share of Working Age Population (POP)</td>
<td>53.63</td>
<td>71.45</td>
<td>47.00</td>
<td>4.89</td>
<td>560</td>
<td>16</td>
</tr>
<tr>
<td>Foreign Direct Investment (FDI)</td>
<td>1.81</td>
<td>20.12</td>
<td>-8.59</td>
<td>2.78</td>
<td>560</td>
<td>16</td>
</tr>
<tr>
<td>Portfolio Investment (PFI)</td>
<td>-0.10</td>
<td>101.07</td>
<td>102.38</td>
<td>7.29</td>
<td>560</td>
<td>16</td>
</tr>
<tr>
<td>Fixed Capital Formation (FCF)</td>
<td>17.62</td>
<td>46.10</td>
<td>-0.06</td>
<td>8.27</td>
<td>560</td>
<td>16</td>
</tr>
<tr>
<td>Access to Telephone (ICT)</td>
<td>23.25</td>
<td>298.42</td>
<td>0.63</td>
<td>50.10</td>
<td>560</td>
<td>16</td>
</tr>
<tr>
<td>Labour Migration (LBM)</td>
<td>-0.03</td>
<td>52.21</td>
<td>-46.54</td>
<td>6.28</td>
<td>560</td>
<td>16</td>
</tr>
<tr>
<td>Good Governance Index (GGI)</td>
<td>2.75</td>
<td>6.65</td>
<td>1.67</td>
<td>5.71</td>
<td>560</td>
<td>16</td>
</tr>
</tbody>
</table>

*Source: Authors’ computation (2020).*
3.3. Data Description

The countries comprise of four nations from the four SSA regions, which are Gabon, Central African Republic, Cameroon, Rwanda, Kenya, Tanzania, Mauritius, Tanzania, South Africa, Malawi, Botswana, Mozambique, Nigeria, Ghana, Benin, and Niger. The data are within 1980-2015. The data was sourced from the World Development Indicators (2018), except for the good governance index (GGI), obtained from the International Country Risk Guide (ICRG, 2018).

The descriptive characteristics of our variables are presented in Table 1. The mean value of human development index (HDI), life expectancy index (LEI), infant mortality rate (IMR, per 1,000 live births), and mean year of adult schooling (MYS) stood at 40.4%, 53.1%, 82.5% and 3.09 years, respectively. These values reflect the low human welfare status of SSA countries. Also, the average amount of the percentage of people with access to improved sanitation (SAN), water (WAT) and health care services (HCS) respectively stood at 31.7%, 61.2%, and 49.9%. The estimates reveal that the majority of people in SSA countries lack adequate access to necessities of life. The mean value of trade flows (TRD) as a share of GDP is 61.1%. It implies that SSA countries are relatively globalized regarding trade flow. Also, the mean value of working population (POP, as a proportion of total population size) stood at 53.6%, indicating that active working age population size dominates SSA countries.

The mean values of foreign direct investment (FDI) and portfolio investment (PFI) as the share of gross domestic product (GDP) are 1.81% and -0.10%, respectively. It reveals that SSA countries are relatively less globalised regarding capital flows. Also, the mean value of gross fixed capital formation (FCF) as a share of GDP and proxy of domestic capital formation stood at 17.6%. These indicate that SSA countries have fairly mobilised domestic capital for investment. The mean values of labour mobility (LBM, proxied by net labour migration as a share of the working-age population), and information and technology penetration rate (ICT, proxied by telephone line density per 1000 people) are -0.03% and 23.25% respectively. The mean value of labour mobility indicates the loss of quality in the productive workforce in the SSA region as the level of emigrant-to-total active population as net value (as a share of working age group) is higher than the percentage of immigrants. The average of ICT penetration rate suggests that SSA countries are less socially globalised via telephone connectivity as a means of information flow within the reviewed periods. Also, the mean value of governance performance rate (GGI) stood at 2.75, implying that SSA countries have weak governance settings and an ineffective governance system.
Fixed Effects Regression of Human Welfare and Transmission Channels of Trade Globalization

<table>
<thead>
<tr>
<th>Variables</th>
<th>Human Welfare</th>
<th>Other Welfare Measures</th>
<th>Access to Basic Necessities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HDI</td>
<td>LEI</td>
<td>IMR</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Constant</td>
<td>-7.286</td>
<td>-3.220</td>
<td>71.177</td>
</tr>
<tr>
<td>(6.79***</td>
<td>(3.34***</td>
<td>(87.58***</td>
<td>(80.7***</td>
</tr>
<tr>
<td>FCF</td>
<td>0.131</td>
<td>0.248</td>
<td>0.090</td>
</tr>
<tr>
<td>(16.51***</td>
<td>(27.7***</td>
<td>(16.05***</td>
<td>(19.3***</td>
</tr>
<tr>
<td>TRD</td>
<td>0.044</td>
<td>0.059</td>
<td>0.043</td>
</tr>
<tr>
<td>(15.18***</td>
<td>(17.5***</td>
<td>(22.94***</td>
<td>(26.6***</td>
</tr>
<tr>
<td>PFI</td>
<td>-0.006</td>
<td>-0.014</td>
<td>-0.013</td>
</tr>
<tr>
<td>(2.01**</td>
<td>(-8.22***</td>
<td>(-1.39</td>
<td>(5.74***</td>
</tr>
<tr>
<td>FDI</td>
<td>0.586</td>
<td>0.316</td>
<td>-2.192</td>
</tr>
<tr>
<td>(41.99***</td>
<td>(31.03***</td>
<td>(-41.52***</td>
<td>(28.15***</td>
</tr>
<tr>
<td>LBM</td>
<td>0.041</td>
<td>0.009</td>
<td>0.184</td>
</tr>
<tr>
<td>(4.54***</td>
<td>(1.151</td>
<td>(-4.99***</td>
<td>(-1.7***</td>
</tr>
<tr>
<td>GGI</td>
<td>-0.037</td>
<td>0.004</td>
<td>0.075</td>
</tr>
<tr>
<td>(-33.08***</td>
<td>(5.26***</td>
<td>(24.68***</td>
<td>(-46.56***</td>
</tr>
<tr>
<td>ICT</td>
<td>0.084</td>
<td>0.022</td>
<td>-0.033</td>
</tr>
<tr>
<td>(42.35***</td>
<td>(35.59***</td>
<td>(-10.66***</td>
<td>(6.25***</td>
</tr>
<tr>
<td>N</td>
<td>0.758</td>
<td>1.205</td>
<td>-0.435</td>
</tr>
<tr>
<td>(36.142***</td>
<td>(67.6***</td>
<td>(-27.61***</td>
<td>(-21.4***</td>
</tr>
</tbody>
</table>

Adj. R² 0.957 0.925 0.992 0.866 0.926 0.890 0.937 0.933 0.927 0.943 0.982 0.984 0.952 0.870
F-Statistic 8112.6*** 5767.9 7261.4*** 3025.5 4574.4*** 3798.9 5485.0*** 6500.2 4673.4*** 7703.0 2099.9*** 2878.1 7331.7*** 3138.1
Hausman Test 25.653*** 3.010 56.741*** 36.54*** 32.187*** 4845 16.333*** 0.455 17.683** 1.386 22.675*** 2.446 42.870*** 18.40***
Obs. 560 560 560 560 560 560 560 560 560 560 560 560 560 560
Cross-Section 16 16 16 16 16 16 16 16 16 16 16 16 16 16

Notes: [1] Model 1 is the augmented theoretical model with control variables; [2] Model 2 is the theoretical baseline model; [3] *** , ** and * denote significant at 1%; 5% and 10% respectively. [4] Absolute t-statistics are in parentheses. [5] All regressions use the fixed cross-section effects cross-section weights standard errors and covariance (d.f. corrected) [6]. Hausman test is based on Chi-square Statistics
Source: Authors’ computation (2020).
4. Discussion of Empirical Findings

In Table 2, we presented the estimation results of the relationship between transmission mechanisms of globalization and human welfare using the panel fixed effects approach. The Hausman test results confirmed the appropriateness of the estimation approach as they were found statistically significant at 5%. The discussion of findings of the links between human welfare and globalization mechanisms are explained in the sub-sections.

4.1. Human Welfare and Trade Openness Nexus in Sub-Saharan Africa

Table 2 shows that trade openness was found to be positive and significant to critical dimensions of human welfare (such as human development index, life expectancy index, access to improved water, and healthcare services) in sub-Saharan Africa countries. However, the intensity of the effect is relatively low compared to the expected, regarding magnitude. This finding is consistent with the apriori expectation as globalization via trade-oriented growth channel is expected to be human welfare enhancing concerning reduction in income inequality and poverty. It is supposed to improve life expectancy, reduce infant mortality rate, and improve access to people’s necessities of life. In magnitude terms, HDI, LEI, reduction in the IMR, lower MYS, access to improved WAT, lesser SAN, and HCS improved by 0.44%, 0.43%, -0.99%, -0.01%, 0.82%, -0.51%, and 0.68% respectively due to 10% changes in trade flows.

The result is in line with the practical conclusions of Dollar and Kraay (2004), Lee and Vivarelli (2006) and Harrison (2006) that trade fosters economic growth, enhances poverty alleviation and welfare development. More so, it agrees with the findings of Obadan and Okojie (2012), Oduh (2012) suggesting that globalization through trade relations is an effective means of generating employment, enhancing human welfare, reducing poverty, and income inequality. This also supports a country level study in Pakistan by Shahbaz (2012) using real GDP per capita as a measure of welfare changes.

Furthermore, studies like Guordon et al. (2008) and Afaha and Njogo (2012), etc. reported contrary findings to our results. They argued that trade flow as a channel of globalization does not enhance human welfare. Also, in a single equation analysis, Heshmati (2003) finds that the trade globalization index explains 7 to 11% human welfare deterioration among developing countries. However, this study establishes that in a much higher magnitude using the same disaggregated approach, TRD explains 93% of changes in human welfare development and lack of access to infrastructure facilities like HCS in the SSA region. In a SSA specific study, Adeyemi
et al. (2006) pooled multiple regression analysis reported that international trade had impacted negatively on human development in the SSA region. The conclusion of Bardhan (2005), Blouin, Chopra and Van der Hoeven (2009), Neculita and Neculita (2012) explains the trade-enhancing effect on human welfare development in SSA countries. Neculita and Moga (2012) conclude that the main driving force for better economic prosperity in trade flows across countries is through technological progress, information, communication and transport, and institutional progress.


This section reports the observed results of the combined effect of capital and financial flows as a channel of globalization on human wellbeing in SSA, also presented in Table 2. From the aggregated model, the result revealed that domestic capital and foreign capital dimension of globalization have direct effects on the HDI, LEI, MYS, access to improved WAT, SAN, and HCS, while it exerts adverse impact on IMR within the periods. Specifically, HDI, LEI, reduction in the IMR, MYS, access to improved WAT, SAN, and HCS improved by 1.31%, 0.9%, -8.26%, 0.05%, 2.22%, 1.50%, and 1.65% respectively due to 10% changes in domestic capital. Likewise, the findings showed that a 10% change in FDI enhanced HDI, LEI, reduction in IMR, MYS, access to improved WAT, SAN, and HCS by 5.86%, 3.16%, -21.92%, 0.11%, 6.76%, 2.68%, and 5.40% correspondingly. The portfolio investment suggested negative effects on the HDI, LEI, IMR, and access to improved HCS in the SSA. They do not conform with theoretical expectation regarding signs except IMR. Conversely, they were significant statistically at 0.01 critical level. It showed that a 10% increase in PFI deteriorates HDI, LEI, IMR, and access to improved HCS by -0.06%, -0.14%, -0.13%, and -0.10% respectively. However, PFI reported a positive and significant impact on MYS, improved access to clean water, and sanitation in SSA within the periods considered. Thus, a 10% increase in PFI improved MYS, improved access to clean WAT, and SAN by 0.004%, 0.29%, and 0.15% correspondingly.

The comparative analysis indicated that domestic and foreign capital flows enhance human welfare development and access to improved basic need, while the financial tide of globalization mostly worsens critical human welfare indicators (HDI, LEI, and HCS). Summarily, it suggests that unlike PFI as a financial channel of globalization, FDI a capital dimension of openness is a significant determinant of human welfare development in the SSA region. The finding supports the empirical results of scholars like Shahbaz (2012) and Kumar and Pacheco (2012), Santarelli and
Figni (2002) that openness to foreign investment enhanced the development of human welfare in some selected developing countries. Hammoris and Kai (2004) noted that financial flow does improve not only the wellness of citizen in SSA countries but also has an equalising effect on income distribution. However, the result negates the findings of Obadan and Okojie (2012) and Ahmad (2014) that financial globalization hurts human welfare development. This difference in findings emanates from the measures of human welfare employed by these studies.

4.3. Human Welfare and Transmission Channel of Labour Mobility and Information Flow in Sub-Saharan Africa (SSA)

The results of the augmented models show that at 1% critical level, governance as an institutional control variable exerted a positive and significant effect on LEI and IMR, while it has an inverse and significant association with HDI, MYS, access to improved WAT, SAN, and HCS in the SSA sub-region. These effects were not in line with the theoretical expectations except for LEI. The reported estimates indicate that a 10% increase in the quality of GGI (increase in governance ineffectiveness) deteriorates HDI, MYS, WAT, SAN, and HCS by -0.37%, -0.01%, -0.88%, -0.15%, and -0.22% respectively and improves LEI and IMR by 0.041% and 0.75% respectively. It reflects that improvement in governance is weak in SSA countries which have a deteriorating effect on human welfare, other welfare measures and access to basic needs. The result is similar to the findings of previous studies such as Dreher and Gaston (2006), Dreher, Gaston, and Martens (2008), Ogwumike and Maku (2012), among others. Our findings suggest that the low level of good governance is one of the most significant factors regarding statistical properties and magnitude that lowered human welfare development, life expectancy index, IMR and limits the access of people to basic needs of life in the SSA region.

Furthermore, labour immigration and emigration (Net LBM) was found to have a positive impact on HDI, LEI, IMR, access to improved SAN and HCS in the region. However, it exerted an inverse relationship with MYS, and access to improved WAT in SSA. The reported effects were in tandem with theoretically expected signs except for the nexus between MYS and access to improved water. In magnitude terms, a 10% increase in net LBM enhanced HDI, IMR, SAN, HCS and reduced IMR, MYS and WAT respectively by 0.41%, 1.84%, 1.23%, 0.67%, and 1.84%, 0.003% and 0.56% respectively. From the high prevalence of labour emigrants over immigrants, labour mobility was found to exert an adverse effect on human welfare changes in SSA region.

The effect of information flow measured by access to the telephone network on human welfare, other welfare measures, and access to necessities in SSA was
discussed based on the estimates reported on the table. Access to a telephone as a channel of information dimension of globalization exert a positive and significant association with HDI, LEI, improved access to SAN, and HCS, while it had an indirect impact on IMR in the region. It was found statistically significant at 1%. These effects conform to the apriori expectations. The result indicates that a 10% increase in telephone access enhanced HDI, LEI, SAN, HCS, and reduction in IMR respectively by 0.44%, 0.22%, 0.28%, 0.45%, and -0.33% correspondingly. The observed outcomes of this study conform to the theoretical expectations. The Information flow via access to a telephone network has been a significant factor that enhances human welfare development, reduces the incidence of IMR and improves peoples’ access to basic needs of life. This outcome complements the argument of Khor (2002) that technical changes are a significant determinant of human welfare in a highly populated and poor developing country like Bangladesh that SSA countries shared similar characteristics. Also, information flow was found to enhance human well-being significantly in the SSA region for all of its proxies such as HDI, LEI, IMR, MYS, and access to essential amenities like WAT, SAN, and HCS. Empirical studies (Dreher, 2006; Dreher and Gaston, 2006; Dreher, Ogwumike and Maku, 2012) show that information flow as a component of KOF social globalization index enhances growth and human well-being in developing countries.

5. Conclusion and Policy Implication

This study investigates the impact of globalization through its various channels such as trade openness, capital and financial flows and labour mobility and information technology on human welfare in sixteen SSA countries within the period of 1980-2015. The study used the panel fixed effects method to investigate the links. This study considered extensive measures of welfare (human development index, life expectancy index, infant mortality rate, mean year of schooling, and access to basic needs of life such as water, sanitation, and healthcare services) as distinct from earlier empirical studies. Empirical evidence indicated that trade openness enhanced human welfare development and the access of people to infrastructural facilities in the SSA regions as a result of adopted and instituted differential trade reforms over the years. Findings further revealed that capital flow through foreign direct investment has a positive impact on welfare mainly concerning human development, life expectancy combating infant mortality rate, and enhanced access to sanitation and human care services in the SSA region. Portfolio investment was found to deteriorate human welfare development in the SSA region.
Furthermore, the results reveal that information flow via the number of telephone line subscribers exerted a positive impact on human welfare development, infant mortality rate, and improved access to water in the region. Furthermore, high labour migration and emigration of experts was found to worsen human welfare development and hinder essential infrastructural growth in SSA. Also, inadequate and ineffective governance has been established to have the highest negative impact on human wellbeing improvement in the region. Consequently, there is a need for policymakers in each SSA country to continuously increase the adoption and utilisation of comprehensive growth-oriented trade policy tools such as reduced tariffs and non-tariff barriers to guide trade interactions with the global world, primarily via exports promotion strategy to facilitate development in human well-being. More so, governance as a crucial determinant of human welfare development in the region requires guided and transparent operations in its implementation of policies that directly affect the people, eradicate corruption, foster political stability and further enhance the adherence to the rule of law.

**End Notes**

1. Policy programmes like Structural Adjustment Programmes (SAPs), Poverty Reduction Strategies (PRSs), Millennium Development Goals (MDGs), Social Protection and Pro-poor growth strategies.

**References**


DILEMMA BETWEEN DEPOSIT AND LENDING RATE:
SAVINGS-INVESTMENT PERSPECTIVE

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JEL: E21, E22, E43

Abstract

The dilemma between deposit and lending rate has created challenges for financial institutions in the course of intermediation. This dilemma also made it difficult for investors to make accurate decisions which has created a lacuna in the financial system. The objective of this study is to investigate the source of the dilemma between deposit and lending rate. The study also examined the impact of deposit and lending rate on saving and investment respectively in Nigeria using the Auto-Regressive Distributed Lag (ARDL) approach. The empirical result revealed the main cause of the dilemma to be the fluctuation in the deposit and lending rate. The ARDL result shows that the deposit rate has a positive impact on savings while the lending rate has a negative impact on investment in Nigeria. The monetary authority should endeavor to maintain stability of the interest rate due to the significant impact of these rates on saving, investment and economic growth at large.

Key words: Deposit Rate, Lending Rate, Savings, Investment.

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1. Introduction

The goal of every nation is to achieve an inclusive economy which caters for both advantaged and disadvantaged groups in the economy via the provision of employment and eradication of poverty. Among the primary goals of the Sustainable Development Goals (SDGs) is eradication of poverty (United Nation, 2017) which is achievable through improving access and making basic financial services available to all citizens in a nation. Accessing basic financial services has been a challenging issue facing the poor in the economy whose income contributes largely to the Gross Domestic Product (GDP) and forms a large proportion of the Small and Medium Enterprises (SMEs) in Nigeria. Accessibility to basic financial services i.e. investible funds contributes largely to the productivity of SMEs and assists in the eradication of poverty in the economy (Soyemi, Olowofela and Yunusa, 2020), helps in the procurement of modernized technical equipment and human capital acquisition (Brune, Giné, Goldberg and Yang, 2015), increases the level of savings in an economy (Karlan and Yin, 2010), among many others.

Mobilization and disbursement of financial resources by the financial intermediaries is highly dependent on the rate of interest dictated by the monetary authority in the country which could be used as a contractionary or expansionary tool in the economy. Variation in the interest rate induces all the macroeconomic indicators making the interest rate a significant phenomenon in determining the output and survival in any economy (Wuan and Adnan, 2015). Saving has been established by theory to equate investment in an economy. Savings-investment are dependent on the level of growth in an economy and on other factors such as success of doing business, level of infrastructural development, expectations (Bano, 2018) love for cash and distress viewed in the banking institution (Acha, 2011) income inequality and the problematic nature of the financial market (Ostry and Reinhart, 1995). Saving-investment is also not independent of the level of interest rate dictated by the monetary authority in the economy. The interest rate could be viewed from two angles, the deposit rate and the lending rate. These rates determine the cost of borrowing, credit availability, level of savings-investment and economic growth in a nation (Ojima and Emerenin, 2015).

The Central Bank of Nigeria (CBN) also uses the interest rate as a significant tool for stabilizing the economy which could either be used to tighten or expand the economy depending on the situation in the latter. In a period of depression, the interest rate is decreased in order to make borrowing less expensive and may be increased during the boom period in order to control for inflation which makes the
economy contrast and borrowing becomes expensive. The interest rate is also crucial to determining the deposit and lending rate used by commercial banks in the course of intermediation. To foster savings, a higher deposit rate must be given to the depositors and to foster investment, a lower lending rate is expected in order to encourage the SMEs and make borrowing less expensive to the investors. It is, however, imperative to note that the depositors' return and the banks' margin are sourced from the interest income which comes from loans and advances given to the investors. This simply means that retaining the depositors and borrowers requires a higher deposit rate and a lower lending rate respectively. This conflict has created the dilemma between the deposit rate and the lending rate for the bank and made intermediation challenging to the banks in the financial system. Prior studies done in Nigeria have not paid attention to the dilemma between the deposit and the lending rate. This overlooked dilemma between deposit and lending rate alongside their respective impact on saving-investment is what this study intends to proffer a definite solution to.

The depositor’s savings is highly determined by the deposit rate which is the compensation given to the depositor for the usage of his money. Increase in the deposit rate encourages more savings which will be transformed into investment. Contrarily, reduction in the deposit rate discourages the depositor from saving which reduces the savings and investment. The disparity between the deposit and lending rate obtainable in Nigeria is, however, worrisome to the stakeholders in the economy. An average bank interest rate on demand deposit in Nigeria is 4.2% while the prime and maximum lending rate on general commerce is 15% and 30% respectively (CBN, 2017) which could be responsible for the low level of growth rate in the economy. The borrower is interested in the cost of capital accumulation (lending rate) which determines the borrowers projection of the Internal Rate of Return (IRR). A higher lending rate requires the investors to project an IRR higher than the lending rate in order to maximize profit. A lower lending rate increases the borrower’s profitability and encourages borrowing. The Marginal Efficiency of Capital (MEC) as explained by (Keynes, 1936; Brainard and Tobin, 1968; Tobin, 1969) (which is the additional income generated by the additional capital introduced into a project) opine that borrowers are encouraged to borrow if the MEC is higher than the lending rate which makes borrowing less expensive and project more profitable (MEC > lending rate). The inability to obtain a reasonable rate of interest by both borrower and lender and the difficulty encountered in forecasting the interest rate has created a lacuna in making investment decisions which has posed challenges on the financial intermediaries and policy makers which also informed the enquiry in this line of thought.
Growth sustainability in an economy is highly dependent on numerous factors among which is investment (Harrod, 1939; Domar, 1946; Solow, 1956; Romer, 1986). Many other scholars also followed this line of thought in their work that investment is very crucial to the survival and growth in an economy (Wuan and Adnan, 2015). More so, the McKinnon-Shaw theory (1973) asserted that a higher deposit rate induces savings, which is supported by other theories (Corsepius and Fisher, 1986; Fry, 1980). Contrarily, some scholars asserted that a higher interest rate decreases savings (Siaw and Lawer, 2015; Sukmana and Kassim, 2010; Haron and Azmi, 2006). However, in a practical banking scenario, these assertions look ambiguous and need to be re-examined because of what is obtainable in reality looking at the peculiarity of Nigerian economy, the heterogeneous nature of the Nigerian banking industry and the rational behaviour of depositors in the Nigerian financial system which is bank based in nature.

Evidence from the literature reviewed showed that numerous studies have been conducted on the interest rate, savings-investment nexus both locally and internationally by looking at the impact of interest rate on savings-investment. This study however contributes to knowledge by investigating the cause of the dilemma between the deposit and lending rate and the resultant effect of the interest rate on saving-investment in Nigeria. This will be done by carrying out a situational analysis test using the deposit rate, lending rate, saving and investment. The resultant effect of the increase/decrease in the rates was investigated against the level of saving and investment in Nigeria using the Auto-Regressive Distributed Lag (ARDL) approach.

2. Literature Review

The interest rate was first used as an instrument of monetary policy in Nigeria in 1962 following the introduction of money market instruments. The significance of the interest rate in an economy appeared to be inseparable from the monetary authority been an indispensable tool used for controlling daily activities and bridging the gap between the rich and the poor in the economy. Scholars arrived at varying conclusions about the magnitude and direction of the interest rate on saving-investment. Ogbulu, Uruakpa & Umezinwa (2015) investigated the relationship between deposit rate and mobilisation of deposit in Nigeria. The empirical findings revealed no existence of any relationship between the deposit rate and deposit mobilization in Nigeria. Similarly, Onwumere, Okore and Imo (2012) found no significant relationship between the interest rate and savings in Nigeria. Contrarily, (Ojima and Emerenin, 2015) investigated the effect of interest rate on investment in Nigeria and found that the interest rate inversely affects investment in Nigeria.
However, (Udude, 2015) examined the relationship between interest rates and saving in Nigeria and found a positive relationship between the interest rate on deposits and savings. He also discovered that income will boost the level of savings only if income as a percentage of GDP is on the increase as well. Hiltar (2015) examined the differential impact of interest rate liberalisation on investment in Nigeria during the pre- and post-liberalisation regimes. The study revealed that the interest rate has a significant impact on investment in Nigeria. In the same vein, Davis and Emerenini (2015) investigated the causal relationship between interest rate and investment in Nigeria and discovered an inverse relationship between the interest rate and investment in Nigeria. George-Anokwuru (2017) analysed the nexus between interest rates and Private Domestic Investment in Nigeria. The empirical finding showed that the interest rate inversely affects domestic investment. Additionally, (Adofu and Alhassan, 2018) examined the effect of interest rate deregulation on gross domestic investment in Nigeria using the cointegration approach. The empirical results indicate that the gross domestic investment is impacted negatively by the interest rate, other explanatory variables, namely deregulation, savings and exchange rate all induce investment positively. The empirical result obtained from the study of (Okumoko, Akarara and Eluan, 2018) is at variance with previous literature. They examined the effect of liberalization of interest rate on investment in Nigeria and found that interest rate liberalisation positively affects investment, while inflation and market capitalization negatively affect investment in Nigeria.

Evidence from other African countries was also considered in the course of this study. Matsheka (1998) analysed the effects of interest rates on savings in Botswana. The empirical result showed that the interest rate positively impacts savings which leads to an increase in economic growth. More so, the study of (Mashamba, Magweva and Gumbo, 2014) examined the role of deposit rates and deposit mobilization in Zimbabwe. The empirical findings revealed that an increase in the deposit rate leads to higher bank deposit. Mwega and Ngola (1991) investigated the relationships between interest rates and financial and non-financial saving in Kenya. The empirical findings revealed the deposit rate induces savings but a higher deposit rate reduces the demand for loan and advances.

Evidences from outside African climes were also reviewed in order to have a robust opinion about the subject matter. Mushtaq and Siddiqui (2017) investigated the role of interest rate on savings from Islamic and Non-Islamic countries. The empirical result revealed that the interest rate impacts savings positively in both economies. Similarly, Athukorala (1998) investigated the relationship between interest rate and savings-investment in India. The outcome revealed that there is a
positive relationship between the interest rate and savings which translates into an increase in investment. Bano (2018) examined the relationship between interest rate and investment in some selected countries on the Pacific Islands. The empirical result showed that the interest rate inversely affects investment in the short-run but positively affects investment in the long-run. More so, (Hammad, Khan and Abdullah, 2010) examined the determinants of saving in Malaysia and found one of the determinants of savings to the return earned by the depositor of funds.

Meanwhile, Obansa et al. (2013) examined the existing relationship between exchange rate, interest rate and economic growth in Nigeria. They concluded that the exchange rate impacts economic growth more than the interest rate. However, the interest rate had a positive impact on economic growth at the early stage, but declined as the time horizon increased. Similarly, (Gylych, Fadimatu and Abdurahman, 2016) investigated the relationship between the rate of interest and economic growth in Nigeria. They found the interest rate to induce economic growth in Nigeria. Bruce, Ananth & Hansen (2013) investigated the relationship between real interest rates and economic growth. The empirical findings revealed a negative relationship between the interest rate and economic growth. Mushtaq and Siddiqui (2016) analysed the influence of the religious standard on the financial decisions of people in a Muslim economy, saving and investment. The empirical finding revealed that savings in non-Islamic countries are induced by interest rate but not induced by interest in Islamic countries.

3. Methodology

This study adopts ex post facto research and employed situational analysis to analyse the dilemma between the rates. Inferential statistics was used in estimating the relationship between deposit rate, lending rate, savings and investment in Nigeria in order to establish the causal relationship between the variables.

The annual time series data for the study were obtained from the CBN statistical bulletin, National Bureau of Statistics and Index Mundi covering the period from 1981 to 2018.

The model for the objective was adopted from the work of Adofu and Alhassan (2018) which will be modified in order to suit the objective of this research. It is expressed as follows:

\[
LNTSD_t = \beta_0 + \beta_{1DE}R_t + \beta_{2EX}C_t + \beta_{3MO}S_t + \beta_{4EX}D_t + \beta_{5LI}Q_t + \mu_t
\]

equation (1)
\[ LNGCFt = \beta_0 + \beta_1 LERt + \beta_2 EXCt + \beta_3 MOS_t + \beta_4 EXDt + \beta_5 LIQt + \mu t \]

Where:
- GCF = Gross Fixed Capital Formation
- EXC = Exchange rate
- EXD = External Debt
- TSD = Total Savings Deposit
- LER = Lending Rate
- DER = Deposit Rate
- LIQ = Liquidity Ratio
- MOS = Money Supply

**Description of Variables**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Description</th>
<th>Measurement/Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent</td>
<td>TSD</td>
<td>Total Savings Deposit</td>
</tr>
<tr>
<td></td>
<td>GCF</td>
<td>Gross Fixed Capital Formation</td>
</tr>
<tr>
<td>Independent</td>
<td>EXC</td>
<td>Exchange rate</td>
</tr>
<tr>
<td></td>
<td>LIQ</td>
<td>Liquidity Ratio</td>
</tr>
<tr>
<td></td>
<td>LER</td>
<td>Lending Rate</td>
</tr>
<tr>
<td></td>
<td>DER</td>
<td>Deposit Rate</td>
</tr>
<tr>
<td></td>
<td>EXD</td>
<td>External Debt</td>
</tr>
<tr>
<td></td>
<td>MOS</td>
<td>Money Supply</td>
</tr>
</tbody>
</table>

*Source: Authors' Compilation, 2020.*
The data collected will be subjected to the Autoregressive Distributed Lag (ARDL) estimation technique in order to test for short and long-run relationship between variables in the model.

The *a priori expectation* shows the expected signs and significance of the values of the coefficient of the parameter under review on the part of the empirical evidence and theoretical assertion.

**Table 1**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Symbol</th>
<th>Expected sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exchange Rate</td>
<td>EXC</td>
<td>(-)</td>
</tr>
<tr>
<td>Lending rate</td>
<td>LER</td>
<td>(-)</td>
</tr>
<tr>
<td>Deposit rate</td>
<td>DER</td>
<td>(+)</td>
</tr>
<tr>
<td>Liquidity Ratio</td>
<td>LIQ</td>
<td>(-/+ / +/-)</td>
</tr>
<tr>
<td>Money Supply</td>
<td>MOS</td>
<td>(+)</td>
</tr>
<tr>
<td>External Debt</td>
<td>EXD</td>
<td>(-)</td>
</tr>
</tbody>
</table>

**4. Results and Discussion**

This section consists of the situational analysis results, the unit root test and the ARDL result. The situational analysis result is presented in Table 2. Table 2 presents lending rate, deposit rate, savings, investment and the GDP in order to ascertain the cause of the dilemma between deposit-lending rate and savings-investment in Nigeria.

**Table 2**

<table>
<thead>
<tr>
<th>YEAR</th>
<th>DER (%)</th>
<th>SAVINGS (Trillion Naira)</th>
<th>SAVINGS (% OF GDP)</th>
<th>LER (%)</th>
<th>INVESTMENT (Trillion Naira)</th>
<th>INVESTMENT (% OF GDP)</th>
<th>GDP (Trillion Naira)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>12.81</td>
<td>2,552</td>
<td>46.55</td>
<td>21.32</td>
<td>2,099</td>
<td>38.28</td>
<td>5,482</td>
</tr>
<tr>
<td>2000</td>
<td>11.69</td>
<td>4,037</td>
<td>57.16</td>
<td>21.27</td>
<td>2,405</td>
<td>34.05</td>
<td>7,063</td>
</tr>
<tr>
<td>2001</td>
<td>15.26</td>
<td>3,108</td>
<td>37.75</td>
<td>23.44</td>
<td>2,473</td>
<td>30.04</td>
<td>8,234</td>
</tr>
<tr>
<td>2002</td>
<td>16.67</td>
<td>3,914</td>
<td>34.03</td>
<td>24.77</td>
<td>3,079</td>
<td>26.77</td>
<td>11,502</td>
</tr>
<tr>
<td>2004</td>
<td>13.70</td>
<td>6,476</td>
<td>35.73</td>
<td>19.18</td>
<td>4,724</td>
<td>26.06</td>
<td>18,124</td>
</tr>
</tbody>
</table>
From Table 2, the deposit rate attains its highest value in 2002 (16.67) and the lowest value in 2011 (5.67). The lending rate reaches its highest value in 2002 (24.77) and the lowest value in 2008 (15.14). Practically, to encourage savings, the deposit rate needs to be increased while the lending rate should be decreased in order to increase the level of investment. Empirically, the historical data shows that both deposit and lending rate have been fluctuating which makes it difficult to attribute a particular direction to the deposit and lending rate. This would however make it difficult for the surplus and the deficit unit to make decisions.

More so, a positive relationship was observed between the saving-investment and GDP in Nigeria. This is an indication that the increasing level of saving-investment has contributed to the growth of Nigerian economy. However, it is to be noted that savings and investment in Nigeria have been increasing regardless of the fluctuating rates obtainable and dictated by the financial institutions. The continuous fluctuation in these rates may give rise to instability in the economy which could jeopardize the efforts of the monetary authorities in the economy. This could be supported by the empirical result of decreasing saving-investment as percentage of GDP in Nigeria. Savings as a percentage of GDP reached its highest value in the year 2000 which is 57.16% and kept falling to 13.08% in 2016 and increased to 16.90% in 2018. Similarly, investment as a percentage of GDP reached its highest value in the year 1999 which is 32.28% and kept falling to 14.17% in 2013 and increased to 19.01% in 2018. This shows that the
monetary authority needs to restore the economy back to the former situation by ensuring an increasing growth rate in saving-investment percentage of GDP.

**Table 3**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Level T-Stat</th>
<th>Critical Value @ 5%</th>
<th>First Difference T-Stat</th>
<th>Critical Value @ 5%</th>
<th>Order of Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>DER</td>
<td>-2.848561</td>
<td>-2.94</td>
<td>-7.695999</td>
<td>-2.94</td>
<td>I(1)</td>
</tr>
<tr>
<td>INF</td>
<td>-2.756391</td>
<td>-2.94</td>
<td>-9.447935</td>
<td>-2.94</td>
<td>I(1)</td>
</tr>
<tr>
<td>LIQ</td>
<td>-3.223066</td>
<td>-2.94</td>
<td>-9.466231</td>
<td>-2.94</td>
<td>I(0)</td>
</tr>
<tr>
<td>lnMOS</td>
<td>-1.940284</td>
<td>-2.94</td>
<td>-4.669738</td>
<td>-2.94</td>
<td>I(1)</td>
</tr>
<tr>
<td>lnTSD</td>
<td>-2.212247</td>
<td>-2.94</td>
<td>-5.839320</td>
<td>-2.94</td>
<td>I(1)</td>
</tr>
<tr>
<td>lnEXD</td>
<td>-0.467326</td>
<td>-2.94</td>
<td>-4.706641</td>
<td>-2.94</td>
<td>I(1)</td>
</tr>
<tr>
<td>lnEXC</td>
<td>-2.007403</td>
<td>-2.94</td>
<td>-5.185391</td>
<td>-2.94</td>
<td>I(0)</td>
</tr>
<tr>
<td>LER</td>
<td>-3.483797</td>
<td>-2.94</td>
<td>-9.657455</td>
<td>-2.94</td>
<td>I(1)</td>
</tr>
<tr>
<td>lnGCF</td>
<td>-0.167619</td>
<td>-2.94</td>
<td>-3.691714</td>
<td>-2.94</td>
<td>I(1)</td>
</tr>
</tbody>
</table>

**Source:** Authors' computation (Stata), 2020.

The study used Phillips-Perron to ascertain the order of integration of the variables. It is observed that all the variables are stationary at first difference I(1) except for liquidity ratio and lending rate which are stationary at level I(0) using 5% significance level. The appropriate modus operandi of analysis that captures the combination of I(1) and I(0) stationary variables is the Auto-Regressive Distributed Lag (ARDL) model (Pesaran & Shin, 2012; Pesaran, Shin, & Smith, 2001). The functional relationship of the savings and investment mode is given as:

**Savings Model**

\[ \Delta TSD_t = \alpha_0 + \sum_{i=1}^{n} \alpha_{1i} \Delta TSD_{t-1} + \sum_{i=1}^{n} \alpha_{2i} \Delta DER_{t-1} + \sum_{i=1}^{n} \alpha_{3i} \Delta LIQ + \sum_{i=1}^{n} \alpha_{4i} \Delta EXD_{t-1} + \sum_{i=1}^{n} \alpha_{5i} \Delta MOS_{t-1} + \sum_{i=1}^{n} \alpha_{6i} \Delta EXC_{t-1} + \beta_1 TSD_{t-1} + \beta_2 DER_{t-1} + \beta_3 LIQ_{t-1} + \beta_4 EXD_{t-1} + \beta_5 MOS_{t-1} + \beta_6 EXC_{t-1} + \mu_t \tag{1} \]

Equation 2 below shows the short-term relationship in the savings model

\[ \Delta TSD_t = \alpha_0 + \sum_{i=1}^{n} \alpha_{1i} \Delta TSD_{t-1} + \sum_{i=1}^{n} \alpha_{2i} \Delta DER_{t-1} + \sum_{i=1}^{n} \alpha_{3i} \Delta LIQ + \sum_{i=1}^{n} \alpha_{4i} \Delta EXD_{t-1} + \sum_{i=1}^{n} \alpha_{5i} \Delta MOS_{t-1} + \sum_{i=1}^{n} \alpha_{6i} \Delta EXC_{t-1} + \delta ECT_{t-1} + \epsilon_t \tag{2} \]
Investment Model

\[ \Delta GCF_t = \alpha_0 + \sum_{i=1}^{n} \alpha_{1i} \Delta GCF_{t-1} + \sum_{i=1}^{n} \alpha_{2i} \Delta LER_{t-1} + \sum_{i=1}^{n} \alpha_{3i} \Delta LIQ + \sum_{i=1}^{n} \alpha_{4i} \Delta EXD_{t-1} + \sum_{i=1}^{n} \alpha_{5i} \Delta MOS_{t-1} + \sum_{i=1}^{n} \alpha_{6i} \Delta EXC_{t-1} + \beta_1 GCF_{t-1} + \beta_2 LER_{t-1} + \beta_3 LIQ_{t-1} + \beta_4 EXD_{t-1} + \beta_5 MOS_{t-1} + \beta_6 EXC_{t-1} + \mu_t \]

equation (3)

Equation 2 below shows the short-term relationship

\[ \Delta GCF_t = \alpha_0 + \sum_{i=1}^{n} \alpha_{1i} \Delta GCF_{t-1} + \sum_{i=1}^{n} \alpha_{2i} \Delta LER_{t-1} + \sum_{i=1}^{n} \alpha_{3i} \Delta LIQ + \sum_{i=1}^{n} \alpha_{4i} \Delta EXD_{t-1} + \sum_{i=1}^{n} \alpha_{5i} \Delta MOS_{t-1} + \sum_{i=1}^{n} \alpha_{6i} \Delta EXC_{t-1} + \delta ECT_{t-1} + \epsilon_t \]

equation (3)

Where

\[ \Delta \] is the first difference operator
\[ \alpha_0 \] is the drift component, \( \mu \) is the white noise term
\[ \alpha_1 - \alpha_6 \] represent the error correction dynamic
\[ \beta_1 - \beta_6 \] represents the long-run relationship
\( ECT \) is the error correction term

Optimal Lag Length Selection

The implication of the lag length selected explains the effect of the outcome of the previous year on the current year. The selection of an optimal lag length was very essential before carrying out the ARDL, the result of which is presented in Table 4.

**Table 4**

Optimal Lag Length Selection Criteria

<table>
<thead>
<tr>
<th>Lag</th>
<th>Saving Model</th>
<th>AIC</th>
<th>Investment Model</th>
<th>AIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>23.7112</td>
<td></td>
<td>22.1022</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>17.491</td>
<td>15.2415</td>
<td>10.5511</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>17.3356</td>
<td>15.7299</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>17.694</td>
<td>14.9945</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>14.4676*</td>
<td></td>
<td>10.5511*</td>
<td></td>
</tr>
</tbody>
</table>

*Source: Author computation (Stata), 2020.*

The result in Table 4 portrays a different lag length criterion (LL, LR, FPE, AIC, HQIC and SBIC). The Akaike Information Criterion depicting lag order length of
four (4) for the model is selected. After establishing the lag order length, the ARDL short and long-run results were estimated and explained in the next section.

The ARDL Bound Test

To investigate the presence of long-run relationships among the variables, the bound testing under Pesaran et al. (2001) procedure is used. The bound testing procedure is based on the F-test. The F-test is a test of the assumption of no cointegration among the variables against the premise of its existence, denoted as:

\[
H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = 0, \text{ i.e., there is no cointegration among the variables.}
\]

\[
H_1: \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq \beta_6 \neq 0, \text{ i.e., there is cointegration among the variables.}
\]

Table 5

<table>
<thead>
<tr>
<th></th>
<th>Saving Model</th>
<th></th>
<th>Investment Model</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>F-Statistics</td>
<td>4.221</td>
<td>F-Statistics</td>
<td>5.005</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lower bound</td>
<td>Upper bound</td>
<td>5%</td>
<td>Lower bound</td>
</tr>
<tr>
<td>2.62</td>
<td>3.79</td>
<td>2.62</td>
<td>3.79</td>
<td></td>
</tr>
</tbody>
</table>

Source: Authors' computation (Stata), 2020.

Given the result of the Bound test, the F-statistic value should be compared with the Pesaran critical value at traditional levels of significance. Since the F-statistic of the savings model 4.221 is higher than the upper bound critical value, we thus reject the null hypothesis and conclude that deposit rate, exchange rate, external debt, money supply and liquidity ratio have co-movements in the long-run in Nigeria. The F-statistic of the investment model is 5.005 which is greater than the upper bound test result, we thus reject the null hypothesis and conclude that lending rate, exchange rate, external debt, money supply and liquidity ratio have co-movements in the long-run in Nigeria. From the results, we can hence estimate the long-run relationship between the dependent variables and the explanatory variables.
Table 6

ARDL Long-Run Result

<table>
<thead>
<tr>
<th>Variable</th>
<th>Savings Model Coefficient</th>
<th>Investment Model Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>DER</td>
<td>0.2881125*** (0.2188866)</td>
<td>-0.2490148 (0.2006608)</td>
</tr>
<tr>
<td>LER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lnEXC</td>
<td>4.866054** (0.6297911)</td>
<td>2.210919* (0.3195835)</td>
</tr>
<tr>
<td>lnEXD</td>
<td>-7.787282*** (3.19778)</td>
<td>7.776841 (10.03927)</td>
</tr>
<tr>
<td>lnMOS</td>
<td>-0.3066908** (0.1162146)</td>
<td>0.00891 (0.1188816)</td>
</tr>
<tr>
<td>LIQ</td>
<td>0.0117109 (0.0516288)</td>
<td>-0.2767614 (0.3034079)</td>
</tr>
</tbody>
</table>

Source: Authors' computation (Stata), 2020.
NB: The dependent variables are lnTSD and lnGCF, Standard errors are in parentheses. *, ** and *** significant at 1%, 5% and 10% respectively.

The results in Table 6 indicate that in the long-run, the deposit rate has a positive significant impact on total customers savings deposit which implies that an increase in the deposit rate leads to 0.2881125 increase in total customers’ savings deposit. The exchange rate has a positive significant impact on customers savings deposit which implies that an increase in the exchange rate leads to 4.866054 increase in total customers’ savings deposit. The external debt has a negative significant impact on total customers savings deposit which means an increase in the external debt leads to 7.787282 decrease in total customers’ savings deposit. The money supply has a negative significant impact on total customers savings deposit which means that an increase in the money supply will lead to 0.3066908 decrease in total customers’ savings deposit. Liquidity has a positive insignificant impact on total customers savings deposit which implies that an increase in the liquidity ratio will lead to 0.0117109 increase in total customers’ savings deposit.

More so, the lending rate has a negative insignificant impact on gross fixed capital formation which means an increase in the lending rate leads to 0.2490148 decrease in gross capital formation. The exchange rate has a positive significant impact on gross fixed capital formation which means an increase in the exchange rate leads to 2.210919 increase in gross capital formation. The external debt has a positive insignificant impact on gross fixed capital formation which implies that an increase in the external debt will also lead to 7.776841 increase in gross capital formation. The money supply has a positive insignificant impact on gross fixed capital formation which means an increase in the money supply will lead to 0.00891 increase in gross fixed capital formation. The liquidity ratio has a negative insignificant impact on
gross fixed capital formation which implies that an increase in the liquidity ratio will lead to 0.2767614 decrease in gross fixed capital formation.

Table 7

|                  | CointEq(-1) | \(\text{D(lnTSD)}(-1)\) | \(\text{D(lnTSD)}(-2)\) | \(\text{D(lnGCF)}(-1)\) | \(\text{D(lnGCF)}(-2)\) | \(\text{D(lnGCF)}(-3)\) | \(\text{D(DER)}\) | \(\text{D(DER)}(-1)\) | \(\text{D(DER)}(-2)\) | \(\text{D(DER)}(-3)\) | \(\text{D(LER)}(-1)\) | \(\text{D(LER)}(-2)\) | \(\text{D(LER)}(-3)\) | \(\text{D(lnEXC)}\) | \(\text{D(lnEXC)}(-1)\) | \(\text{D(lnEXC)}(-2)\) | \(\text{D(lnEXC)}(-3)\) | \(\text{D(lnEXD)}\) | \(\text{D(lnEXD)}(-1)\) | \(\text{D(lnEXD)}(-2)\) | \(\text{D(lnEXD)}(-3)\) | \(\text{D(lnMOS)}\) | \(\text{D(lnMOS)}(-1)\) | \(\text{D(lnMOS)}(-2)\) | \(\text{D(lnMOS)}(-3)\) | \(\text{D(LIQ)}\) | \(\text{D(LIQ)}(-1)\) | \(\text{D(LIQ)}(-2)\) | \(\text{D(LIQ)}(-3)\) |
|------------------|-------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                  | -0.54073** (0.2288023) | 0.2148467 (0.2483789) | 0.2184773 (0.3243438) | -1.167755*** (0.5675721) | -1.735381** (0.4571886) | -1.47962** (0.4476414) | -0.232011* (0.0885133) | -0.1864302*** (0.0767649) | 0.0058138 (0.0557926) | 0.0664536 (0.0481106) | 0.0691474** (0.021865) | 0.0631415** (0.0207044) | 0.0373432** (0.0110723) | 0.5014545 (1.001386) | 0.6770793 (1.061225) | -0.1697169 (0.8864392) | -0.7058251 (0.932319) | 3.631424*** (0.01.500245) | 3.187269** (1.220654) | 1.918119*** (0.9223551) | 1.414285*** (0.6760326) | 0.1982651** (0.0731126) | 0.0609491 (0.049398) | -0.0203901 (0.0343994) | -0.0479276*** (0.0230466) | -0.0077301 (0.0270468) | -0.0121219 (0.018883) | -0.0007334 (0.0134155) | 0.0142392 (0.0109205) |
|                  | -0.2289952** (0.2234007) |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
L. Yunusa, I. Adekunle, T. Williams, J. Akindele. Dilemma Between Deposit And Lending Rate: Savings-Investment Perspective

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>R-squared</td>
<td>0.9326</td>
<td></td>
</tr>
<tr>
<td>Adj R-squared</td>
<td>0.5549</td>
<td>0.6696</td>
</tr>
<tr>
<td>Durbin Watson Stat</td>
<td>2.684336</td>
<td>2.397007</td>
</tr>
<tr>
<td>ARCH LM Test</td>
<td>0.2025</td>
<td>0.5699</td>
</tr>
<tr>
<td>Breusch-Godfrey LM test for autocorrelation</td>
<td>0.1086</td>
<td>0.2360</td>
</tr>
<tr>
<td>Breusch-Pagan / Cook-Weisberg test for heteroskedasticity</td>
<td>0.0548</td>
<td>0.2762</td>
</tr>
<tr>
<td>Ramsey RESET test</td>
<td>0.8924</td>
<td>0.2133</td>
</tr>
</tbody>
</table>

**Source:** Authors’ computation (Stata), 2020.

**NB:** The dependent variables are lnTSD and lnGCF, Standard errors are in parentheses. *, **and *** significant at 1%, 5% and 10% respectively.

The short-run result shows that the error correction term (ECT) is -0.54073 and -0.2289952 for the savings and investment model respectively which are negative and significant at 5% level and in line with the *apriori expectation*. The estimate of the ECT implies that the speed of adjustment towards long-run equilibrium are 54% and 23% for savings and investment model respectively implying that long-run equilibrium can be attained by the system at a speed of 54% and 23% for savings and investment model respectively.

The short-run result for the savings model shows that first and second period lag of total customers savings deposit are positively related to total customers’ savings deposit. The deposit rate and one period lag of deposit rate are inversely related to total customers’ savings deposit and are significant while the second and third period lag of deposit rate are positively related to total customers’ savings deposit. The exchange rate and one period lag of exchange rate are positively related to total customers’ savings deposit while the second and third period lag of the exchange rate are inversely related to total customers’ savings deposit. The external debt, first, second and third period lag of external debt are positive significantly related to total customers’ savings deposit. The money supply and one period lag of money supply are positively related to total customers’ savings deposit while the second and third period lag of money supply are inversely related to total customers’ savings deposit. The liquidity, first and second period lag of liquidity are inversely related to total customers’ savings deposit while the third period lag of liquidity is directly related to total customers’ savings deposit.

The short-run result for the savings model shows that first, second and third period lag of gross capital formation are inversely related to gross capital formation.
First, second and third period lag of the lending rate are positively related to gross capital formation and are significant. The exchange rate and one, second and third period lag of the exchange rate are negatively related to gross capital formation. The external debt, first, second and third period lag of external debt are negative significantly related to gross capital formation. First, second and third period lag of money supply are negatively related to gross capital formation. The liquidity, first, second and third period lag of liquidity are positively related to gross capital formation.

The ARCH LM test and the Breusch-Pagan/Cook-Weisberg test for heteroskedasticity show that the variance is homogeneous, i.e. the variance is constant. The Breusch-Godfrey LM test result which is insignificant simply means that there is no serial correlation problem among the variables which is also confirmed by the Durbin-Watson values. More so, the absence of specification error was confirmed by the Ramsey RESET test which shows that there are no misspecification errors among the models.

The Adjusted R-Square shows that the explanatory variables of the savings and investment model explain 55.49% and 66.60% variations respectively in the dependent variable in the short-run.

**Discussion of Findings**

The study investigated the impact of interest rate on savings and investment in Nigeria using annual data from 1981 to 2018. The situational analysis result was used to observe the dilemma between deposit-lending rate and savings-investment in Nigeria. The Autoregressive Distributed Lag (ARDL) estimation technique was used to establish the short run and long-run dynamics of the model. The ARDL cointegration result were discovered to be negative and statistically significant which shows the existence of cointegration among the variables in the models and also in line with the *apriori* expectation of the models.

The long-run result revealed that the deposit rate has a positive significant impact on total customer saving deposit in the economy which means an increase in the deposit rate leads to increase in total savings deposit. This suggests that bank customers would be encouraged to save more of their disposable income if the deposit rate is increased which yield the customer a higher return for saving their excesses. This result is in line with the *apriori* expectation and the work of (Udede, 2015) but contrary to the work of (Onwumere, Okore and Imo, 2015).

The result also revealed that lending rate has a negative but insignificant impact on gross capital formation which means an increase in the lending rate leads to a
decrease in investment and a decrease in lending rate will make the investment to keep increasing. This implies that an increase in the lending rate would reduce the amount of funds available for the procurement of additional assets in the economy, while a decrease in the lending rate would increase the amount of funds available in the economy. It therefore simply means that an increase in lending rate will discourage people from requesting credit which could worsen the economic activities while the decrease will promote and encourage people to obtain more credit form the banks. This result is in line with the *apriori* expectation and work of (Onwumere, Okore and Imo, 2015; Hitlar, 2015; Davis & Emerenini, 2015). This result further noted that the liquidity ratio has a negative impact on investment which is in line with the *apriori* expectation, but a positive impact on savings. This implies that higher liquidity helps to meet up with the customers requirement but reduces the amount of investible funds. More so, the exchange rate has a positive impact on both savings and investment. The external debt is negatively related to savings but positively related to investment which implies that an influx of external finance discourages savings but increases the level of investible funds which would stimulate economic activities.

Hence, the null hypothesis which states that the deposit rate has no significant impact on savings in Nigeria should be discarded while the null hypothesis which states that the lending rate has no significant impact on investment in Nigeria should be accepted. Therefore, the deposit rate has a significant impact on savings in Nigeria. The diagnostic test results show that the variance is homogeneous there is no serial correlation problem among the variables. The Ramsey RESET test also shows the absence of misspecification errors among the models.

### 5. Summary and Conclusion

This study examined the effect of the interest rate on saving and investment in Nigeria using annual data series from 1981 to 2018. This study narrowed down the interest rate to interest on savings and investment which are regarded as deposit rate and lending rate respectively. The dilemma between the deposit-lending rate and saving-investment was analysed using the situational analysis approach. The historical data revealed that the dilemma between the deposit and lending rate was due to the fluctuation in the deposit and lending rate. More so, the saving-investment as a percentage of GDP revealed an unimpressive situation due to the persistent decrease in the percentage of savings-investment to GDP in Nigeria.

This study furthermore examined the impact of the deposit rate on savings and the impact of the lending rate on investment in Nigeria. The data was estimated
through the ARDL estimation technique based on the stationarity level of the data. The empirical findings revealed that the deposit rate is positively related to savings, while the lending rate is inversely related to investment in Nigeria. The evidence from this result shows that an increased deposit rate encourages the bank customer to save more, while a lower lending rate encourages investors to obtain credit for investment which increases the output in the economy as well as the bank interest income. The exchange rate is positively related to savings and investment which suggests that regardless of the exchange rate, the bank customers will deposit more and the investors would obtain higher credit for investment.

External debt and money supply are inversely related to savings but directly related to investment, suggesting that external debt and money supply discourage savings but promote investment in the country. Liquidity is positively related to savings but negatively related to investment suggesting that the ability of the [] to meet up with customers' requirements encourages customers to save more but would adversely affect the amount of funds available for investment. However, based on the objectives of this study, it is concluded that the deposit rate has a positive significant impact on savings while the lending rate has a negative impact on investment in Nigeria.

The study recommends that the monetary authority should create policies to prevent the fluctuating deposit and lending rate due to the significant impact these rates have on the saving, investment and growth of the economy at large. Efforts should also be made in order to achieve a sustainable interest rate as this will help to increase the economic activities in the country via savings mobilization for investment in Nigeria. The monetary authority should also ensure a stable rate in order to assist depositors and investors in making accurate and informed decisions in line with the changes in rates.

References


KNOWLEDGE TRANSFER AND BUSINESS PERFORMANCE: A STUDY OF MANUFACTURING ORGANIZATIONS IN Ogun State, THE FEDERAL REPUBLIC OF NIGERIA

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JEL: M30, M31, M37

Abstract

The study examines the impact of knowledge transfer on business performance in the manufacturing sector in Nigeria based on the sample of 20 manufacturing organizations in Shagamu local government, Ogun State, Nigeria. The data used for this study were cross-sectional data that were primarily sourced from the workers of those sampled manufacturing organizations through questionnaires as the instrument of data collection and responses from one hundred and fifty-three (153) respondents. The data were analyzed using Ordinary Least Square (OLS) regression technique for analysis and estimating the relationship and effect between explanatory variables and dependent variable. The findings of the study with 5% level of significance revealed that with β value .204 and t-value 2.420 (p = 0.017), trust has a direct relationship and significant effect on business performance. With β value .366 and t-value 4.826 (p = 0.000), communication has a direct relationship and significant effect on business performance. It is, therefore, recommended that management should encourage effective communication and trust among the employees, leaders to spell out organizations objective unambiguously and also advise that management should consider making the knowledge star workers to have a feeling of participation and input in the management process.

Key words: knowledge transfer, trust, communication, business performance

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DOI:
1. Introduction

For value creation in any set-up, knowledge is crucial because it is the platform for both innovation and development in any organization and is becoming ever more salient (Uta & Carlos, 2018; OECD, 2013). The widespread and rapid diffusion of information and communication technologies (ICTs) from the 1990s onwards increasingly accelerated the knowledge creation process and also added to the importance of knowledge for innovation and development (Mansell & Wehn, 1998). Since the emergence of ICTs that enable even faster and easier sharing of data, information and knowledge, explicit and tacit knowledge transfer within organization and between organizations is germane and depends on personal interactions and collective actions to achieve specific goals and outcomes of any organization (Uta & Carlos, 2018). However, these interactions exhibit virtually powerful bottlenecks in the transfer of knowledge process due to various (and possibly conflicting) behavioral goals and expected outcomes, structures in (dis)incentives and capabilities which have not been sufficiently examined.

The heartbeat of any organization is knowledge; therefore the effective knowledge transfer process is inherent for the creation of successful performance in projects. Thus, the key success in all aspects of human endeavor is knowledge because it has become the absolute asset for organizations (Pasaribu, Afrianti, Gumilar, Rizanti & Rohajawati, 2017). Despite the benefits of knowledge transfer application to organizations, the literature shows that individuals share and transfer knowledge in organizations for several reasons: either for personal, egotistical altruistic or social reasons (Vivian & Kathryn, 2017).

Notwithstanding the availability of so many research works on both the topic of knowledge transfer and business performance separately, the academic contributions that indeed examine the link between the two variables are limited in number. Considering the practical relevance of these research areas, this study represents an attempt to narrow the knowledge gap, analyzing how knowledge transfer and business performance significantly influence each other.

1.1. Research Objectives

The broad objective of the study is to examine the effect of knowledge transfer on business performance in manufacturing organizations in Ogun state, Nigeria. The other objectives of the study are to:

i. examine the effect of trust on business performance,

ii. determine the effect of communication on business performance.
The research work is organized as follows; section one discussed the introduction. Section two is about the literature, while section three of the study presents the methodology. This is then followed by section four that contains the result and discussion, summary, conclusion and implication for management.

2. Literature Review

2.1. Concept of Knowledge

According to Beceral - Fernandez and Sabherwal (2010) stated that knowledge is an organized structure of facts, relationships, experience, skills and insights that generate action. Thus, it is an essential asset for organizational success and therefore embodied within the organization and should be a process via the social interchange (Sensuse, 2014). It is considered as a driver of innovation and competitive advantage within any industry and constitutes the “mind” of any organization therein. Also, knowledge is a familiarity, awareness, or understanding of someone or something, such as facts, information, descriptions, or skills, which is acquired through experience or education by perceiving, discovering or learning.

2.1.1. Concept of Knowledge Transfer

The significance of knowledge transfer is clearly stated in the past studies and literature (Noor, Muhd & Norhayati, 2018; Vivian & Kathryn, 2017; Cormican & Dooley, 2007; Bock, Kankanhalli & Sharma, 2006 and McDermott & O’dell, 2001). Knowledge transfer can be defined as the process by which an organization leverages knowledge and information among members, thereby promoting learning and producing new knowledge or understanding. It is also a transformation process where information is gathered, processed, transferred and absorbed in a creative way. The knowledge transfer application other advantages to the firm according to the previous research works are well performed and process, better decision making and development of individual competencies.

Paola, Federico, Alessandria & Laura, (2019) define knowledge transfer as the multiple ways in which knowledge from universities and public research institutions can be exploited by firms and other organizations to generate economic and social value and industry development (OECD, 2013). It embraces a wide range of activities to assist the collaborations between universities, industry and the public sector, and it involves a variety of goals, modes and channels.

According Noor, Muhd, & Norhayati, (2018) knowledge transfer is defined as a process through which knowledge moves between a root and a recipient and where knowledge is given and practiced. Nguyen & Burgess (2014) show that knowledge
transferred is possible among individuals between levels in the hierarchy of the firm and between units and departments and in various companies, saying that transferring knowledge from one part to another is practical problems. Such as knowledge management, knowledge transfer, which aims to capture, create, organize and distribute knowledge and ensure its availability for future users.

2.1.2. Trust

Previous studies emphasized that trust is a vital factor to knowledge transfer within team members, groups, projects and firms and also has a significant effect on overall performance (Vivian & Kathryn, 2017; Alessia, Wenche & Ali, 2016; Cormican & Dooley, 2007; Meuller, 2012; Al-Alawi, Al-Marzooqi & Mohammed, 2007; Wickramasinghe & Widyarante, 2012; Lin, 2007 and Costa, Roe & Taillieu, 2001). The existence of trust is essentially needed between employees’ team members in order to share their knowledge among themselves. According to Wickramasinghe & Widyarante (2012), in case of project and organizational failures interpersonal trust has been found to remove the employees chances to blame fellow team members. However, it can be destroyed easily between team members and takes a long period to establish because it is a complicated factor that changes between people over time (Costa, Roe & Taillieu, 2001).

2.1.3. Communication

Prior research suggest that communication has a positive relationship with knowledge transfer in workplace and firms and is positively related to improved performance (Vivian & Kathryn, 2017; Alessia, Wenche & Ali, 2016; Al-Alawi et al, 2007; Cormican & O’Sullivan, 2003; Wickramasinghe & Widyarante, 2012 and Crawford & Strohkirch, 2006). Effective communication supports transfer of knowledge and assists in the achievement of objectives within the organization. It was found that an open desk design enables communication in the organizations as it also assists in the creation of strong relationship between team members (Al-Alawi et al, 2007). The factors of communities of practice and advice network have a strong impact on communication.

2.1.4. Concept of Business Performance

Performance can be referred to as a fact of life. In any endeavor we input momentary attention for performance to be deduced or felt if necessary (Folan, Browne & Jagdev, 2007). Also, performance can be defined as a concept that is shown by firm’s prominent employees while undertaking and fulfilling their tasks.
Therefore, it describes how groups or individuals reach a conclusion to attain a goal. Thus, it is a way of defining where one decides and wants to go hence not an objective reality only (Lebas, 1995).

2.2. Theoretical Review

a. Knowledge-Based View Theory

The firm's knowledge-based theory sees knowledge as a company's most strategically important resource. Because knowledge-based resources are generally hard to imitate and socially complicated, its advocates claim that heterogeneous knowledge bases and capacities among companies are the main determinants of continuous competitive advantage and superior corporate performance.

According to the knowledge-based perspective, the strategic alliance's main advantage is access to knowledge. The Strategic Alliance contributed significantly to the implementation of knowledge by enhancing effectiveness where knowledge is incorporated and how knowledge is effectively implemented. Strategic alliance is defined as an arrangement between two or more sides to attain common objectives that pool resources and ability, to distinguish more substantially and collaborate (Teece, 1992). This activity can be a supplier-buyer relationship outsourcing agreements, technology collaboration, joint resources, new product development, shared manufacturing, and common distribution agreements across selling arrangement and franchising. Strategic alliance also could be a contractual agreement, such as franchising, cross licensing, agreement, ownership link (cross holding and joint venture).

Knowledge-based strategy is rooted in resource-based strategy to alliance with certain types of resource that impact alliance formation and focus on research and development performers. The theory stressed the use of corporate or internal organization as a means of increasing the flow of productive information (Kogut & Zander, 1992).

2.3. Empirical Review

Vivian & Kathryn, (2017) researched on the analysis of knowledge transfer practices: Insights from a medical device manufacturing organization in Ireland. The study reports on an empirical analysis of knowledge transfer practices in a large multinational organization operating in the medical technology sector in the country with the aim of ascertaining the extent and nature of knowledge sharing that takes place within this organization. To do this, the author proxy knowledge transfer using trust, communication, leadership, motivation and rewards. After which a survey
questionnaire was created which contained 25 items and a 5-point Likert scale to measure the level of agreement with each of the items. It was found out that respondents believe that effective communication has the strongest influence on the organization’s overall performance, followed by trust, then motivation, then leadership. However, rewards were found to be least important factor but still important in the overall context of knowledge sharing.

Ellis & Zhongqi, (2016) studied factors influencing technology and knowledge transfer: Configuration recipes for Sub-Saharan Africa from United Kingdom. The study adopted configuration recipes (multivariate regression analysis) with fuzzy set qualitative comparative analysis to supplement the analysis. They found out that quality local firms should have ingrained supportive human resource management/development and knowledge management systems to enhance the quality technology and knowledge transfer. Weak institutions could also be responsible for low and poor technology knowledge transfer in Sub-Sahara Africa. Ineffective industry associations, professional bodies, and educational systems could also explain poor technology and knowledge transfer. These findings were in consistence with those of Borensztein, De Grigorio & Lee (1998); Caves (1996); Dunning (1998); Minbaeva, Pedersen, Bjorkman, Fey & Park (2003) and Osabutey, William & Debrah (2014).

Moslem & Farzaneh, (2016) studied the relationship between total quality management, knowledge transfer and knowledge diffusion in the academic settings in Shiraz University, Iran. The objective of this research is to investigate total quality management practices affecting knowledge transfer and knowledge diffusion in the academic settings. As it was a descriptive research, the research instrument was questionnaire and the methods used for data analysis were correlation and structural equation modeling by means of the path analysis. The study found out that there was a significant relationship between learning, autonomy, as the total quality management practices and knowledge transfer, and between knowledge transfer and knowledge diffusion. Also in the study, it was revealed that among the total quality management practices, learning and employee fulfillment, have the significant correlation with knowledge diffusion.

Ofobruku & Yusuf, (2016) studied the effect of knowledge transfer on employees’ performance in selected small business in Asaba, Nigeria. The objective of this research work in Africa especially in Nigeria is to examine the effect of knowledge transfer on employee performance in a small business in the industry of agriculture in Asaba. To achieve this objective, the study used survey design with qualitative and quantitative data. The population used for the work was small
agriculture business in Asaba with two hundred and ninety-seven (297) responses from the respondents of the small agriculture businesses were analyzed using regression as statistics technique. The results of the study established the that knowledge transfer had a positive effect on employees’ performance and came to a conclusion that performance of the employees in the organization will be better improved based on the level of Knowledge transfer scheme put in place within the organization.

3. Methodology

Survey research design was adopted for this study which contains a quantitative research approach employed using structured questionnaire as the main source of the research instrument (Perri & Bellamy, 2012). The method of investigating the survey is justified because it helps to collect data from members of the population to decide on their current status in the population with respect to the variables (Maree, 2010). This study was carried out in Ogun state, Southwest Nigeria. It is predominantly a Yoruba speaking region, though populated by various dialects and other ethnic groups. Ogun state has an estimated population of about 5,217,716 people (National Bureau of Statistics, 2017) and the 312 registered and licensed manufacturing organizations within the state (ministry of commerce and industry, Ogun state, 2019) represent the study target population. This research was largely based on cross-sectional primary data through a self-structure administered questionnaire. The researchers distributed 200 questionnaires with 15 same questions in each questionnaire among the employees within the manufacturing department/unit/section of the sampled organizations and got 175 responses returned. These represent 87.5% response rates. The analysis of data was finally based on 153 good responses after removing 21 responses that were bad. Information was gathered from the sampled manufacturing organizations workers among the 312 registered and licensed manufacturing organizations. The sample size for the study was 20 manufacturing organizations in Shagamu Local Government through the purposive sampling technique. The purpose for the sample size is based on the argument for sample size determination raised by Fraeklin &Wallen (2002). This study adopted content validity in which the questions were subjected to scrutiny by experts. For the purposes of this study, internal consistency was emphasized and adopted. Thus, the study employed coefficient alpha (Cronbach alpha) to verify the internal consistency of each construct in order to achieve reliability of the research instrument and measurement scale.
3.1. Research Hypotheses

The following hypotheses are appropriate to the above stated objectives and were tested in this study.

H₀₁: There is no significant effect of trust on business performance.
H₀₂: There is no significant effect of communication on business performance.

4. Result and Discussion

4.1. Descriptive Statistics of the Data

<table>
<thead>
<tr>
<th>Explanatory variables</th>
<th>Rate of Respondent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>Trust</td>
<td>3.8%</td>
</tr>
<tr>
<td>Communication</td>
<td>2.6%</td>
</tr>
</tbody>
</table>


Figure 4.1.1a. Trust as a measure of knowledge transfer
4.1.1a. Discussion of finding (Trust)

The factor of trust as a measure of knowledge transfer relates to the existence of trust essentially needed between and among employees’ team members in an organization in order to transfer their knowledge among themselves. The result table shows that 3.8% and 12.5% of the respondents strongly disagree and disagree with the factor of trust as a measure of knowledge transfer, 16% among them are indifference and undecided while 44.4% and 23.3% among the respondents agree and strongly agree with the fact that trust is a measure of knowledge transfer. It is therefore means that trust is a factor to measure knowledge transfer with 44.4% and 23.3% agree and strongly agree with the notion.


Figure 4.1.1b. Communication as a measure of knowledge transfer

4.1.1b. Discussion of findings (Communication)

The factor of communication as a measure of knowledge transfer supports and assists in the achievement of organization’s objectives. It is also found that open desk
design aids communication and as well assists in the creation of strong relationship among team members in an organization. The result reveals that 2.6% and 3.5% of the respondents strongly disagree and disagree with the concept, 5.5% among the respondents are indifferent and undecided while 45.9% and 42.5% among them agree and strongly agree that communication is a measure of knowledge transfer. Hence, with 45.9% and 42.5% of agree and strongly agree, communication is a measure of knowledge transfer.

4.2. Test of Hypothesis 1

4.2.1. $H_0$: There is no significant effect of trust on business performance.

Table 4.2.1

<table>
<thead>
<tr>
<th>Business Performance</th>
<th>B</th>
<th>Std. Error</th>
<th>$\beta$</th>
<th>t</th>
<th>$t$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.127</td>
<td>.053</td>
<td>.204</td>
<td>2.420</td>
<td>0.017</td>
</tr>
</tbody>
</table>

$R^2 = .097$

F-Statistics = 3.169 (p = 0.010)

Durbin-Watson = 1.716

Collinearity = 1.000


The result in table 4.2.1 reveals that there is a relationship between trust and business performance. The $R^2$ (0.097) statistically indicates that trust brings about 9.7% variation in business performance. This shows that 90.3% variations are caused by other factors not explain in the model. The unstandardized coefficient ($B = .127$) slows that for every one (1) unit increase in trust, business performance has more chances to increase by .127 units. The $\beta$ value (.204) reveals that there is a direct relationship between trust and business performance. The $t$ – value ($t = 2.420, p = 0.017$) shows that trust is a significant predictor of business performance. The $F$ – statistics ($F = 3.169, P = 0.010$) shows that the model is significant in explaining the effect of trust on business performance. Hence, it is established that trust has significant effect on business performance. Therefore, the null hypothesis ($H_0$) is rejected.

Durban – Watson

The Durbin – Watson test result reveals that there is no presence of positive serial autocorrelation among the residuals because, the $d$ – value (1.632) moves towards 2.
Collinearity

The VIF in the table (1.158) shows how much of the variable of a coefficient estimate of a regressor has been inflated due to collinearity with other regressors. Since the VIF value above is less than 10, it shows that there is no indication of serious multi-collinearity.

4.2.2. Testing of Hypothesis 2

H₀₂: There is no significant effect of communication on business performance

Table 4.2.2

Summary of regression results of the effect of communication on business performance

<table>
<thead>
<tr>
<th>Business Performance</th>
<th>Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
</tr>
<tr>
<td>Communication</td>
<td>.346</td>
</tr>
</tbody>
</table>

R² = .134
F-Statistics = 23.290 (p = 0.000)
Durbin-Watson = 1.716
Collinearity = 1.000


Table 4.2.2 reveals that there is a relationship between communication and business performance. The R² (.134) shows that communication brings about 13.4% variation in business performance. What this means is that 86.6% variation are caused by other factors not explain in this model. The unstandardized coefficient (B = .346) establishes the fact that for every one (1) unit increases in communication, business performance has chances to be increase by .346 units. The β value .366 reveals that a direct relationship exists between communication and business performance. The t – value (t = 4.826, p = 0.000) indicates that communication is a significant predictor of business performance. The F – statistics (F = 23.290, P = 0.000) statistically explain that the model is significant in explaining the effect of communication on business performance. Therefore, it is establishes that communication has significant effect on business performance. Thus, the null hypothesis (H₀) is rejected.

Durban-Watson

As d – value (1.716) moves towards 2, this test results reveal that there is a no presence of positive serial autocorrelation among the residuals.
Collinearity

The results of collinearity test (i.e. VIF) 1.000 reveals that there is no indication of serious multi collinearity in the variable of a coefficient estimate as the VIF value is less than 10.

4.3. Discussion of Findings

Hypotheses 1 reveal that trust has a direct relationship and significant effect on business performance. The results which corroborated and also in agreement with the previous research by Vivian & Kathryn (2017); Alessia, Wenche & Ali (2016); Cormican & Dooley (2007); Meuller (2012); Al-Alawi, Al-Marzooqi & Mohammed (2007); Wickramasinghe & Widyarante (2012); Lin (2007) and Costa, Roe & Taillieu, (2001) which they all agreed that trust has effect on business performance. The finding is significant at 5% (p = 0.000) and as such, trust has significant effect on business performance. Hence, null hypothesis (H₀) is rejected that says “there is no significant effect of trust on business performance.

Hypotheses 2 reveal that communication has a direct relationship and significant effect on business performance. The findings are in consonance with the studies of Vivian & Kathryn (2017); Alessia, Wenche & Ali (2016); Al-Alawi et al (2007; Cormican & O’Sullivan (2003); Wickramasinghe & Widyarante (2012) and Crawford & Strohkirch, (2006) as they all found positive relationship and significant effect of communication on business performance.

The finding is significant at 5% level of significance (p = 0.000) and as a result communication has significant effect on business performance. Therefore, null hypothesis (H₀) is rejected which says “there is no significant effect of communication on business performance.

5. Conclusion and Implication for Management

The main purpose of this study is to critically examine the effect of knowledge transfer on business performance among the registered and licensed manufacturing organizations in Ogun state The study statement of the problem centered on knowledge assets which are all about intangible assets such as knowledge workers within a firm and how the capabilities of these ‘knowledge star’ must be constantly managed to create a new knowledge for better performance of such organization.

It was revealed that trust with 5% level of significant revealed that with β value .204 and t-value 2.420 (p = 0.017), trust has a direct relationship and significant effect on business performance. The implication of this result is that, in case of business failures, interpersonal trust has been found to remove the employees chances to blame
fellow team members. Also, the result implies that increase in trust among the employees’ team members will lead to increase in business performance. Communication on the other hand, with β value .366 and t-value 4.826 (p = 0.000), communication has a direct relationship and significant effect on business performance. The implication of this is that effective communications assist in knowledge transfer and support in the achievement of business objectives within an organization. Effective communication assists in the creation of strong relationship between team members. An increase in the effective communication will lead to an increase in the performance of business as established in this study. The findings were in consistent with the previous studies results.

Therefore, every business entity that struggles to compete and succeed in the global economy presently needs not only technology but more importantly knowledge. The organizations capacity and skill in acknowledging the worth of new knowledge, assimilate and employ it in their day to day business activities is crucial to the performance of businesses. So, in this contemporary era of business, a business entity should move to the level of knowledge and optimization of physical resources only.

5.1. Recommendation

Based on the findings, the following recommendations were outlined:

a. The study has shown that trust only explain 9.7% variation in business performance in Ogun state manufacturing sector and has a positive and significant effect on performance. Inasmuch as interpersonal trust has been found to remove the employees chances to blame fellow team members when objective is not achieved as well as increase in trust among the employees’ team members will lead to increase in business performance then, management should create an avenue of trust among the employees and also encourage it.

b. Communication explains 13.4% variation in business performance in manufacturing sector in Nigeria. Effective communication assists in knowledge transfer and support in the achievement of business objectives within an organization and assists in the creation of strong relationship between team members. Therefore, effective communication should be encouraged either by face to face, oral or body language and any other means among the team members in an organization as business performance will further increase as a result of increase in communication.
References


EARLY MARRIAGE AS A DETERMINANT OF POVERTY IN NIGERIA

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JEL: J12, I32, I38

Abstract

A greater percentage of women in developing countries married before their 18th birthday. Early marriage serves as a threat to a child's future development. This is because it is difficult to have access to quality education and higher education, and it limits the ability to secure a good job. Also, girls involved in early marriage face acute poverty conditions. This research examined the link between early marriage and poverty in Nigeria. Annual data is sourced from 1970 to 2017. Granger causality is used to determine the nature of causality. Autoregressive Distributed Lagged Model is further used to estimate the data. The result showed that a bi-directional Granger causality exists between early marriage and poverty as well as for low-income and early marriage. In the long-run estimation, early marriage, secondary education and low-income increase poverty. Also, social welfare and access to credit facilities reduce poverty. The policy makers are therefore encouraged to improve social welfare for girls in early marriage and provide easy access to credit facilities for them to pursue higher education or entrepreneurship skills, in a bid to gradually move them out of poverty.

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1. Introduction

Efforts to reduce poverty in the world became part of the issue in the 2030 sustainable development agenda; this is because poverty is one of the worst threats and challenges to human welfare especially in low-income countries (United Nations, 2018). Part of these efforts include boosting agriculture and increasing trade integration to drive economic growth (The World Bank, 2017). In spite the benefits of growth policy received by the poor population in Africa between 2000 and 2016; their consumption growth did not make them escape poverty compared to other developing countries outside Africa (African Economic Outlook, 2020). Also, the extreme poverty rate by region for 2015 showed that Sub-Saharan Africa had 41.1%, which is above South Asia 12.4%, Latin America and the Caribbean 4.1% and the World 10% (The World Bank, 2018), while the poverty headcount rate in 2019 for Nigeria stood at 40.09% (Nigeria Bureau of Statistics, 2019). With the increase in the population of Nigeria, the nation may likely be the country with the poorest people (The World Bank, 2018).

One of the means of increasing the population in Nigeria and other Sub-Saharan Africa developing countries is early marriage through the increase in the fertility rate (Yaya, Odusina & Bishwajit, 2019). In 2018, the percentage of women aged 20-24 married before the age of 15 was 15.7% in Nigeria, 9.4% in Benin, 15.9% in Mali, 5.2% in Zambia and 12.7% in Madagascar. Those who married at the age of 18 stood at 43.4% in Nigeria, 30.6% in Benin, 53.7% in Mali, 29% in Zambia and 13.7% in Morocco (United Nations Children Education Fund (UNICEF), 2020).

The consequences of early marriage are many. First, it lowers educational opportunities for the affected girl child (Brown, 2012). Once they get married, they immediately assume the role of a mother, which in turn forces them to drop out of school. The young brides miss the social skills, formal knowledge, necessary friendship and networks, which the school provides (UNICEF, 2014). Second, early marriage makes the child spouses sad from the first day of the marriage. This is because the bride is not aware of the situation and circumstances around her. She cannot make informed decisions, neither does she have full knowledge of the man she is married to (Adekola, Akanbi & Olawole-Isaac, 2015). Third, child marriages have an effect on the nation’s welfare package in Nigeria. This is due to the fact that the high population growth rate poses challenges and necessitates an update of developmental plans. Hence, government efforts aimed at providing basic social services to improve the lives of the populace may not yield the desired results. Accessing the available essential services therefore becomes the issue of survival of
the fittest. Lastly, there is the possibility of being a single parent as a result of accepting forced cohabitation with a man. The affected girl child faces the problems of stigmatization and social exclusion in life. This and other hidden consequences promote inequality in gender. (Adeyanju & Afolayan, 2012). The inequality in gender may encourage a poverty trap for the girl child in early marriage.

In unravelling whether early marriage causes poverty, this study answered the research question. That is, will early marriage reduce poverty or breed more poverty? The question deserved a place in the literature because of the need for this study. Firstly, the human right violation targeted at the girl child must be reduced. Secondly, the girl child must be afforded the opportunity to receive quality education and live a healthy life. Thirdly, child marriage and its attendant consequences must be eradicated or at least reduced to the barest minimum in order to achieve the 2030 agenda thereby promoting sustainable development. (The Save the Children Fund, 2018 and United Nations Children’s Fund, 2014).

This study contributed to the literature in a number of ways. To start with, early marriage is positive to determine poverty. This means early marriage is an impediment to poverty reduction. Similarly, financial development and social welfare programmes minimize early marriage and poverty. Furthermore, the empirical link between early marriage and poverty is novel in the literature. Also, it poses recommendations to the policy makers on how poverty may be reduced in Nigeria and other developing nations. The remaining part of the paper is divided into four sections; Section 2 discusses the literature review, Section 3 focuses on the research method, while Section 4 presents the estimated result and Section 5 is the conclusion.

2. Literature Review

2.1. Conceptual Review

Child marriage is a form of marriage whereby the spouses are less than 18 years old at the time of contracting the marriage (Parsons et al., 2019; Adekola et al., 2015 & International Center for Research on Women (ICRW), 2006). For a deeper and clearer understanding, the International Planned Parenthood Federation (IPPF, 2007) described child marriage as a form of marriage contracted below the age of 18 years, especially before the girl spouse is matured physically, physiologically, and psychologically and fully ready to shoulder the responsibilities of marriage and child bearing.”

Early marriages are usually organized in two different forms, through certain degree of force and intimidation, either by the girl parents or other powerful
individuals in the family who perfect the marriage arrangement of the girl child to an adult man (Adedokun, Tochukwu & Adedeji, 2012). It is noteworthy that in choosing the most prospective husbands, some factors, such as monetary, religious, social status, etc. are usually the point of attraction. The age difference between the husband and the girl child is not usually considered (Population Council, 2008).

Although the minimum marriage age ranges from one country to the other, the internationally acclaimed and acceptable age is eighteen years, as entrenched in the various conventions and edicts. That is why child marriage is in most cases usually accompanied by some degree of coercion, because a female child is involved. In this case the feeling, emotion, consent, love, education, aspiration, interest, etc. of the bride child is not taken into consideration. It is usually an arranged form of marriage, especially with the consent of the child bride parent or their representative.

The need to have a standardized marriage age across the board has generated some form of argument among scholars. While some supported the idea, others opined that each country should be allowed to determine the minimum marriageable age, with special attention to the girl child. Therefore, Bunting (1999) proposes that governments should be permitted to fix the age of marriage below 18 years of age, but they should further ensure that the reduced age does not in any way discriminate against women or bring any adverse consequences for them.

Girls Not Brides (2018) observed that child marriage is being encouraged by gender disparity and the notion that boys are stronger and more important than girls. In Nigeria for instance, child marriage is mostly observed in the North West and North East. The menace is more pronounced among Nigeria’s poorest, rural households and the Hausa ethnic group. Other factors, according to scholars, that promote child marriage, are the low level of education of girl children, political and economic ties, poverty, violence against girls, gender norms, etc.

As laudable as these programs seem, and the few other physical government efforts, one major impediment to the eradication of child marriage remain the political will and power to enforce these laws (especially at the state and district levels) at the expense of the religions, customs and traditions of the people.

2.2. Empirical Review

Researchers, scholars and notable national and international organizations have contributed to the growing debates on early marriage across the globe. The efficacy of the menace was emphasized when Lemmon and ElHarake (2014) noted that the incidences of child marriage go beyond geographical and national territories and are not restricted to any particular religion, custom or tradition.

Nzenwata (2018) examined the variables that invigorate the practice of child marriage and its effects on Nigerian society. She used 296 self-administered questionnaires to females between the ages of 10-45 years in Kastina State, the Northern part of Nigeria where early girl-child marriage is significantly high. The result showed that early girl-child marriage has a negative effect on Nigeria. The study recommended a feasible and applicable way forward to abolish and manage the victims of early girl-child marriage. Similarly, Kyari and Ayodele (2014) examined the socio-economic effect of early marriage in north western Nigeria using Zaria Local Government as a case study. The results showed that early marriage has a negative effect on girl-child education. Notably among these effects is high poverty rates for households as a result of losses in revenues and increased basic needs of larger family sizes (Wodon, Montenegro, Nguyen & Onagoruwa, 2018). Other effects of child marriage according to Bala (2003) are physical, mental and emotional distress, early widowhood, Vesico Vaginal Fistula (VVF) disease, hatred for the man, school drop-out, frustration and intolerance. Furthermore, Roest (2016) observed that Poverty and social disadvantage are key factors limiting the girl child's prospects and aggravate their risks in life. Generally speaking, early marriage deprives the child brides of their basic rights, which eventually disempowers them in many ways in society.

Khandaker and Shah Md (2015) studied the relationship between extreme weather events and early marriage and violence. Two districts that are prone to flood were selected as the population of the study. Data were collected from 120 household heads while some descriptive statistics and qualitative analysis were used in the data analysis. The findings from the study revealed that most household heads thought that early marriage is poverty coping mechanism. It further reduces their fear of harassing their young girls sexually during extreme weather events. Early marriage was
therefore seen as a means of protecting their family reputation because of fear of sexual harassment during the crises period. In the opinion of Bayisenga (2012), people engaged in early marriage due to religious and socio-cultural values, the search for economic survival, protection of young girls, wars and civil conflicts, controlling female behavior and sexuality, as well as peer group and family pressure. Reuben (2014) studied the causes and effects of early marriage on the girl-child in Suba, a Sub-County in Kenya. It was guided by radical feminist theory and gathered data through the survey method, focus group discussions, direct observation, key informant interviews and narratives. The study found that girls drop out of school at an early age due to poverty and end up marrying early because of not having anything meaningful to do.

Giyan (2009) observed that some religious practices encourage early marriage. In most cases, those that practice the religion usually adopt the practice so as to prevent their girl child from being pregnant out of marriage. Hence, one major available option will be to marry at an early age. In Nigeria for instance, it has been argued that Islamic religion permits and supports early marriage, with a caution that the bride must be mature enough. Lloyd et.al. (2006) further noted that the need to preserve the girl’s virginity so that the family can earn the desired honour and respect in society is an important factor that influences the parents’ choice of supporting the early marriage of their daughters. This is more pronounced in the primitive traditional societies, where the issue of morality, respect and honour are held in high regard. Marrying young daughters to older men was also seen as a means of safeguarding the child bride against potential decadent and inappropriate behavior. Abdallah (2011) observed that child marriage is a common phenomenon in Nigeria, which is strongly tied to the culture, custom, religion and tradition of the people. The menace therefore had resting pillars, which continue to provide a shield for its perpetrators, despite the tremendous efforts of the government and other concerned national and international bodies.

The review of previous studies has shown that numerous factors (with multiplying effects) account for child marriages in the various parts of the world, Nigeria inclusive. These factors however, need to be put on check through deliberate and concerted efforts of all concerned individuals and bodies. The government at all levels must display some degree of seriousness by giving the desired attention to girl children and women. Doing this will prepare and sustain the nation towards achieving the United Nations Sustainable Development Goals.
3. Research Method

3.1. Data

To test the link between early marriage and poverty, this study used annual data from 1970 to 2017. The variables are defined in Table 1, while Table 2 presents the description of the data. Moreover, the poverty rate and the low-income rate followed the disadvantage index approach used in Mata and Bollman (2007). Adolescent fertility from Age 15 -19 (%) is similar to the maternal age at child bearing used in Dahinten, Shapka and Willms (2007). Secondary education studied in Ogundari and Aromolaran (2014) as financial development studied in Rewilak (2017) while Social Welfare studied in Kenworthy (1999).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Definition</th>
<th>Expected sign</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poverty rate (POVH_t)</td>
<td>The inverse of logarithm of per capita household consumption multiply by 100</td>
<td>+</td>
<td>Economics and Research Department, United Nations.</td>
</tr>
<tr>
<td>Early marriage (EM_t)</td>
<td>Early/child marriage proxy by adolescent fertility from Age 15-19 (%)</td>
<td>+</td>
<td>World Development Indicator</td>
</tr>
<tr>
<td>Secondary education (SED_t)</td>
<td>The logarithm of enrolment in secondary schools</td>
<td>+</td>
<td>Nigeria Bureau of Statistics</td>
</tr>
<tr>
<td>Low-income rate (LY_t)</td>
<td>The inverse of logarithm of per capita income multiply by 100</td>
<td>+</td>
<td>Economics and Research Department, United Nations.</td>
</tr>
<tr>
<td>Financial development (FD_t)</td>
<td>Measured by domestic credit provided by financial sector (% of GDP)</td>
<td>-</td>
<td>World Development Indicator</td>
</tr>
<tr>
<td>Social Welfare (SW_t)</td>
<td>Proxy by logarithm of Social Services to Community Expenditure which includes health, education and others.</td>
<td>-</td>
<td>Central Bank of Nigeria</td>
</tr>
</tbody>
</table>
Data description

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Standard Deviation</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>$POVH_t$</td>
<td>8.3328</td>
<td>8.3684</td>
<td>8.5936</td>
<td>8.0117</td>
<td>0.1779</td>
<td>47</td>
</tr>
<tr>
<td>$EM_t$</td>
<td>144.0014</td>
<td>142.0736</td>
<td>172.0360</td>
<td>109.27</td>
<td>20.2624</td>
<td>47</td>
</tr>
<tr>
<td>$SED_t$</td>
<td>14.9293</td>
<td>15.1621</td>
<td>16.3451</td>
<td>12.6445</td>
<td>0.97355</td>
<td>47</td>
</tr>
<tr>
<td>$LY_t$</td>
<td>8.0459</td>
<td>8.0489</td>
<td>8.2911</td>
<td>7.7758</td>
<td>0.1591</td>
<td>47</td>
</tr>
<tr>
<td>$SW_t$</td>
<td>7.8969</td>
<td>7.3358</td>
<td>12.3146</td>
<td>1.4350</td>
<td>2.3944</td>
<td>47</td>
</tr>
<tr>
<td>$FD_t$</td>
<td>13.3583</td>
<td>12.9997</td>
<td>38.3865</td>
<td>4.6995</td>
<td>6.3020</td>
<td>47</td>
</tr>
</tbody>
</table>

3.2. Model specification

In establishing whether a link exists between early/child marriage and poverty, this research adopts a typical household utility model in equation 1, it is a reduced form of the earnings function employed to determine the impact of education on household welfare. In the model, per capita total expenditure measured household welfare (Ogundari & Aromolaran, 2014). In equation 1, $PCE_t$ is the per capita monthly total expenditure on food and non-food items, $X_t$ is the vector of explanatory variables (determinants) used to explain $PCE_t$; $\beta$ is a parameter and it describes effect of $X_t$ on $PCE_t$ while $\mu_t$ is the white noise which indicates the residual in the model.

$$PCE_i = \beta X_i + \mu_t$$

The model in equation 1 suits the intention of this research as presented in equation 2 because the dependent variable in this study measured inverse of per capita household consumption ($POVH_t$), which depend on education at various levels. Likewise, this study used education at secondary level ($SED_t$) as included in the model in equation 1. Thus, the model modified to study early marriage ($EM_t$) while controlling for low-income rate ($LY_t$), social welfare ($SW_t$) and financial development ($FD_t$). $\beta_0$ is constant, $\beta_1$, $\beta_2$, $\beta_3$, $\beta_4$, and $\beta_5$ are parameters as $\mu_t$ is the white noise. $\beta_1$, $\beta_2$ and $\beta_3$ are expected to increase poverty while $\beta_4$ and $\beta_5$ are expected to reduce poverty.

$$POVH_t = \beta_0 + \beta_1 EM_t + \beta_2 SED_t + \beta_3 LY_t + \beta_4 SW_t + \beta_5 FD_t + \mu_t$$

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3.3 Time series property of the data

Time series data are associated with distortion especially from its lagged values; it often occurred due to socio-economic happenings, a situation that makes regression spurious and therefore led to misleading results. This is because time series are not stationary in nature. To avoid these problems, the Augmented Dickey-Fuller (ADF) unit root test was conducted. All variables in the model passed this test at the 5% level of significance (see Dickey & Fuller, 1981). The ADF unit root test applied to the order of integration of the variables at level and first differences with intercept and trend. The result presented in Table 2 showed that only early marriage is at level while other variables are at first difference.

Table 3

Results of the Unit Root Test

<table>
<thead>
<tr>
<th>Variables</th>
<th>ADF Model</th>
<th>Lag length</th>
<th>ADF statistics</th>
<th>Prob. Value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>$POVH_t$</td>
<td>Intercept and trend</td>
<td>1</td>
<td>-9.879</td>
<td>0.000</td>
<td>I(1)</td>
</tr>
<tr>
<td>$EM_t$</td>
<td>Intercept and trend</td>
<td>0</td>
<td>-3.662</td>
<td>0.035</td>
<td>I(0)</td>
</tr>
<tr>
<td>$SED$</td>
<td>Intercept and trend</td>
<td>1</td>
<td>-8.188</td>
<td>0.000</td>
<td>I(1)</td>
</tr>
<tr>
<td>$LY_t$</td>
<td>Intercept and trend</td>
<td>1</td>
<td>-6.033</td>
<td>0.000</td>
<td>I(1)</td>
</tr>
<tr>
<td>$SW_t$</td>
<td>Intercept and trend</td>
<td>1</td>
<td>-7.168</td>
<td>0.000</td>
<td>I(1)</td>
</tr>
<tr>
<td>$FD_t$</td>
<td>Intercept and trend</td>
<td>1</td>
<td>-5.562</td>
<td>0.000</td>
<td>I(1)</td>
</tr>
<tr>
<td>$DI_t$</td>
<td>Intercept and trend</td>
<td>1</td>
<td>-6.483</td>
<td>0.000</td>
<td>I(1)</td>
</tr>
</tbody>
</table>

Note: the figures reported are t-ratio and showed the p-values of MacKinnon (1996) one-sided at various levels of significance. The asterisks (*** is at 1%.

From the above, it is discovered that there is a mixture of integration of I(0) and I(1) in the ADF test. In addition, there is a tendency for early marriage among teenagers to encourage poverty; and the same time families that experience poverty gave their children for marriage early. This suggests the two variables are endogenous. Besides, Pesaran, Smith and Shin (2001) proposed that the autoregressive distributed lagged model (ARDL) suits estimation of variables integrated at I(0) and I(1). It is also good to estimate variables that are endogenous because it uses a period lag of the dependent variable in the model; it helps to minimize the problem of endogeneity once it found that there is no serial correlation. Further, it provides room to test whether serial correlation exists in the model (Pesaran and Shin,
Early Marriage as a Determinant of Poverty in Nigeria

1997). Narayan (2005) argued ARDL fit to test small sample size. In view of these advantages of ARDL, this study employed its usage and the model in equation 1 transformed into an ARDL framework as presented in equation 2.

\[
\Delta POVH_t = \beta_0 + \beta_1 POVH_{t-1} + \beta_2 EM_{t-1} + \beta_3 SED_{t-1} + \beta_4 LY_{t-1} + \beta_5 SW_{t-1} + \beta_6 FD_{t-1} + \sum_{i=1}^{p} \gamma_1 \Delta POVH_{t-1} + \sum_{i=0}^{p} \gamma_2 \Delta EM_{t-1} + \sum_{i=0}^{p} \gamma_3 \Delta SED_{t-1} + \sum_{i=0}^{p} \gamma_4 \Delta LY_{t-1} + \sum_{i=0}^{p} \gamma_5 \Delta SW_{t-1} + \sum_{i=0}^{p} \gamma_6 \Delta FD_{t-1} + \mu_t \tag{3}
\]

Liew (2004) concluded that in testing a small sample size, the Akaike Information Criterion (AIC) is preferable because it ensures the dynamic transformation of the model. Based on AIC, the lag selection are determined and specified as ARDL (1, 1, 0, 0, 0, 0) (see Table 3). The cointegration test was conducted with the F-statistic in the bound test. The F-statistic allowed for a joint test of series in the model at one period of lag to determine the presence of co-integration in the long-run. Sequel, this joint significance is based on the null hypothesis of no co-integration where \( H_0 : \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = 0 \) (implies non-existence of cointegration) and the alternative is \( H_1 : \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq \beta_6 \neq 0 \) and where at least one of the \( \beta_1 \) to \( \beta_6 \neq 0 \) (implies the existence of cointegration) in equation 2. Besides the \( \gamma_1, \gamma_2, \gamma_3, \gamma_4, \gamma_5 \) and \( \gamma_6 \) are the short run coefficients. Thus, there is cointegration among the variables as presented in Table 4.

4. Results and Discussion

Earlier, this study observed that there is a possibility that poverty and early marriage may be endogenous. To ascertain this, a pairwise Granger causality is tested, the result is presented in Table 3. The result showed that there is a bi-directional causality between early marriage and poverty, which confirms the endogeneity in the model tested. That is, current values of poverty are affected by past values of early marriage and thus, vice versa. Similarly, a bi-directional causality exists between low income and early marriage. However, a unidirectional causality ran from low income to secondary education and from low income to social welfare. Further, the causality ran from social welfare to early marriage, and financial development to early marriage.

Being fully aware that there is endogeneity bias in the model and also that the model comprised of mixture of integrated series of I(0) and I(1), ARDL became the best model to estimate the data in this study. The result of the estimation through ARDL is presented in Table 4. It comprises of long run and short run as well as the
diagnostic tests. Further, the F-test calculated is above the critical F-test at the 1% level of significance, which indicates a joint movement exist among the variables based on the AIC specified for the ARDL transformation.

**Table 4**

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>k</th>
<th>Obs</th>
<th>F stat</th>
<th>P value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM&lt;sub&gt;t&lt;/sub&gt; does not Granger cause POVH&lt;sub&gt;t&lt;/sub&gt;</td>
<td>1</td>
<td>46</td>
<td>7.536</td>
<td>0.008***</td>
<td>EM ↔ POVH Bi-directional</td>
</tr>
<tr>
<td>POVH&lt;sub&gt;t&lt;/sub&gt; does not Granger cause EM&lt;sub&gt;t&lt;/sub&gt;</td>
<td>1</td>
<td>46</td>
<td>12.591</td>
<td>0.000***</td>
<td>POVH → LY Unidirectional</td>
</tr>
<tr>
<td>LY&lt;sub&gt;t&lt;/sub&gt; does not Granger cause POVH&lt;sub&gt;t&lt;/sub&gt;</td>
<td>1</td>
<td>47</td>
<td>0.080</td>
<td>0.777</td>
<td></td>
</tr>
<tr>
<td>POVH&lt;sub&gt;t&lt;/sub&gt; does not Granger cause LY&lt;sub&gt;t&lt;/sub&gt;</td>
<td>1</td>
<td>47</td>
<td>10.230</td>
<td>0.002***</td>
<td></td>
</tr>
<tr>
<td>LY&lt;sub&gt;t&lt;/sub&gt; does not Granger cause EM&lt;sub&gt;t&lt;/sub&gt;</td>
<td>1</td>
<td>46</td>
<td>7.537</td>
<td>0.008***</td>
<td>LY ↔ EM Bi-directional</td>
</tr>
<tr>
<td>EM&lt;sub&gt;t&lt;/sub&gt; does not Granger cause LY&lt;sub&gt;t&lt;/sub&gt;</td>
<td>1</td>
<td>46</td>
<td>3.621</td>
<td>0.063</td>
<td>SW → EM Unidirectional</td>
</tr>
<tr>
<td>SW&lt;sub&gt;t&lt;/sub&gt; does not Granger cause EM&lt;sub&gt;t&lt;/sub&gt;</td>
<td>1</td>
<td>46</td>
<td>7.022</td>
<td>0.011**</td>
<td></td>
</tr>
<tr>
<td>EM&lt;sub&gt;t&lt;/sub&gt; does not Granger cause SW&lt;sub&gt;t&lt;/sub&gt;</td>
<td>1</td>
<td>46</td>
<td>0.313</td>
<td>0.578</td>
<td></td>
</tr>
<tr>
<td>FD&lt;sub&gt;t&lt;/sub&gt; does not Granger cause EM&lt;sub&gt;t&lt;/sub&gt;</td>
<td>1</td>
<td>46</td>
<td>3.674</td>
<td>0.061</td>
<td>FD → EM Unidirectional</td>
</tr>
<tr>
<td>EM&lt;sub&gt;t&lt;/sub&gt; does not Granger cause FD&lt;sub&gt;t&lt;/sub&gt;</td>
<td>1</td>
<td>46</td>
<td>0.925</td>
<td>0.341</td>
<td></td>
</tr>
<tr>
<td>LY&lt;sub&gt;t&lt;/sub&gt; does not Granger cause SED&lt;sub&gt;t&lt;/sub&gt;</td>
<td>1</td>
<td>47</td>
<td>3.850</td>
<td>0.056*</td>
<td>LY → SED Unidirectional</td>
</tr>
<tr>
<td>SED&lt;sub&gt;t&lt;/sub&gt; does not Granger cause LY&lt;sub&gt;t&lt;/sub&gt;</td>
<td>1</td>
<td>47</td>
<td>0.268</td>
<td>0.606</td>
<td></td>
</tr>
<tr>
<td>SW&lt;sub&gt;t&lt;/sub&gt; does not Granger cause LY&lt;sub&gt;t&lt;/sub&gt;</td>
<td>1</td>
<td>47</td>
<td>0.102</td>
<td>0.750</td>
<td></td>
</tr>
<tr>
<td>LY&lt;sub&gt;t&lt;/sub&gt; does not Granger cause SW&lt;sub&gt;t&lt;/sub&gt;</td>
<td>1</td>
<td>47</td>
<td>7.207</td>
<td>0.010**</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** k is the lag length in the model as the asterisks * is at the 1% (***), 5% (**) and 10% level of significance.

Table 5 showed the long-run estimated results. Early marriage is significant to determine poverty at the 1% level of significance. A 1% increase in early marriage causes 0.01% increase in poverty. This result answered the research question that early marriage breeds more poverty. Secondary education is positive to determine poverty at the 1% level of significance. That is, 1% increases in secondary education
causes 0.14% increase in poverty. This result supports Ogundari and Aromolaran (2014) that found that return on secondary education is lower to enhance per capita consumption when compared to return on tertiary education. Similarly, this study detected that low-income rate is significant to determine poverty at the 1% level of significance. This means that when the population with low-income increased by 1%, this gave rise to 0.52% in poverty. Results on low-income corroborate Fonta, Nkwenkeu, Lath, Hollebecque, Ouedraogo, and Sirajo (2018). Fonta et al., (2018) concluded that access to an increase in the source of income reduces the chances of poverty severity. That is, when the source of income is poor, it encourages the children of such families to feed poorly and have poor access to education and health. The social welfare is a viable measure to reduce poverty significantly at the 1% level of significance. It means that when social welfare policy increases by 1%, there is a certainty that poverty would reduce by 0.03%. This result supports Kenworthy (1999). The ability to have access to funds through financial development is viable to cause reduction in poverty at the 1% level of significance. An increase of 1% in financial development creates room for 0.006% reduction in poverty. This result is in line with Rewilak (2017) who found that financial deepening and physical financial access have greater poverty reduction effect; however, it ascertained that financial instability encourages poverty as it lowers economic growth.

The result in the short-run estimation showed that early marriage and low-income supports the result obtained in the long-run. While 1% increases in early marriage increases poverty by 0.008%, 1% increases in low-income increases poverty by 3.287%. However, financial development portrayed it effect tool to reduce poverty as it supports the result in the long-run estimation. The error correction term $ECT_{t-1}$ is -0.803 and significant at the 1% level of significance. Disequilibrium in the model becomes stable by 80.3% in a year. This means that deviation in the short run corrected for in 1.24 years for the model to get back to equilibrium in which the full equilibrium is 100%.

**Table 5**

<table>
<thead>
<tr>
<th>Critical bounds (F-test)</th>
<th>Lower</th>
<th>Upper</th>
<th>Test of ARDL specification significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1% significance level</td>
<td>3.06</td>
<td>4.15</td>
<td>AIC* SB HQ Adj-R-square</td>
</tr>
</tbody>
</table>

Dependent variable: Poverty (POVH)
### 5% significance level

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>2.39</th>
<th>3.38</th>
<th>2.708</th>
<th>-2.390</th>
<th>-2.589</th>
<th>0.893</th>
</tr>
</thead>
</table>

### 10% significance level

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>2.08</th>
<th>3.00</th>
</tr>
</thead>
</table>

### Conclusion (significance level)

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>5</th>
</tr>
</thead>
</table>

### Long-run Estimates

<table>
<thead>
<tr>
<th>Coefficients</th>
<th>t-statistics</th>
<th>Coefficients</th>
<th>t-statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>$E_{t}$</td>
<td>0.010</td>
<td>$P_{t-1}$</td>
<td>-0.803</td>
</tr>
<tr>
<td>$S_{t}$</td>
<td>0.141</td>
<td>$S_{t-1}$</td>
<td>0.113</td>
</tr>
<tr>
<td>$L_{t}$</td>
<td>0.523</td>
<td>$E_{t}$</td>
<td>0.008</td>
</tr>
<tr>
<td>$W_{t}$</td>
<td>-0.031</td>
<td>$L_{t}$</td>
<td>0.420</td>
</tr>
<tr>
<td>$D_{t}$</td>
<td>-0.006</td>
<td>$S_{t-1}$</td>
<td>-0.025</td>
</tr>
<tr>
<td>$C$</td>
<td>0.859</td>
<td>$D_{t}$</td>
<td>-0.005</td>
</tr>
</tbody>
</table>

### Short-run Estimates

<table>
<thead>
<tr>
<th>Coefficients</th>
<th>t-statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Delta S_{t}$</td>
<td>-0.236</td>
</tr>
<tr>
<td>$C$</td>
<td>0.690</td>
</tr>
<tr>
<td>$e_{t-1}$</td>
<td>-0.803</td>
</tr>
</tbody>
</table>

### Diagnostics Tests

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\chi^{2}$</td>
<td>$0.072 (0.964)$</td>
</tr>
<tr>
<td>$\chi^{2}_{FF}$</td>
<td>$1.875 (1.179)$</td>
</tr>
<tr>
<td>$\chi^{2}_{SC}$</td>
<td>$0.928 (0.335)$</td>
</tr>
<tr>
<td>$\chi^{2}_{H}$</td>
<td>$3.423 (0.180)$</td>
</tr>
</tbody>
</table>

**Note:** the asterisk (*) showed that the estimated coefficients are significant at 1% (***) and 5% (**) and 10% (*) and the t-statistics are in parenthesis. Also, the diagnostic tests Normality test ($\chi^{2}_{N}$), Functional test ($\chi^{2}_{FF}$), Serial Correlation test ($\chi^{2}_{SC}$) and Heteroscedasticity test ($\chi^{2}_{H}$) are significant at 5%. Variables are defined as Poverty ($P_{t}$) as dependent variable. Early Marriage ($E_{t}$), Secondary Education ($S_{t}$), Low-income rate ($L_{t}$), Social Welfare ($W_{t}$) and Financial Development ($D_{t}$) are independent variables. The ARDL specification is based on AIC and the F-statistic in the bounds test based on critical upper bounds.
Early Marriage as a Determinant of Poverty in Nigeria

5. Conclusion and Policy Recommendation

This paper examined the impact of early marriage on poverty in Nigeria from 1970 to 2017. The results indicated that early marriage increases poverty. Likewise, secondary education and low income also increase poverty. Further, social welfare and financial development are capable of reducing poverty in Nigeria.

The results implied that children of low income would not attend a higher education institution. Moreover, they have chances of being poor. Lower education reduces the chances of getting a good job. Thus, enhanced income to move them out of poverty becomes scarce. It becomes difficult for a child bride with a growing family size to support the family. This invariably makes the continuous existence of a circle of poverty inevitable and exerts a greater pressure on the available welfare services.

To reduce the poverty caused by early marriage, this paper hereby suggests the following:

i. Adequate tertiary education for girl children should be compulsory in the country.
ii. The government should improve the condition of those involved in child/early marriage. This is possible by enhancing the provision and accessibility of social welfare services.

iii. The community should assist girl children in marriages by giving them credit facilities. Such funds should be used to pursue higher education or get entrepreneurship skills and vocation. This, if properly planned and implemented, would let them have a sustainable means of livelihood, thereby gradually moving them out of poverty.

References


IMPACT OF TERTIARY EDUCATION TRUST FUND (TETFUND) INTERVENTIONS ON INDUSTRIAL PEACE IN OLABISI ONABANJO UNIVERSITY, AGO-IWOYE, OGUN STATE

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JEL: J52, J53, H52

Abstract

The Tertiary Education Trust Fund (TET FUND) was established by the Federal Government of Nigeria to tackle the problem of inadequate funding of tertiary institutions which had been a major source of industrial unrest and disharmony in these institutions. This study therefore examined the impact of TET FUND interventions on industrial peace in Olabisi Onabanjo University, Ogun State, Nigeria. Descriptive survey research design was adopted and qualitative data were collected using a questionnaire to elicit information from a total number of 250 respondents from total population of 1,723 staff of the university. From the sample size, 128 (56%) were male while 122 (54%) were female. Data collected were analyzed using regression analysis to test all the hypotheses at 0.05 level of significance. Findings revealed that TET FUND interventions have significant impact on infrastructural development, staff development and industrial peace in Olabisi Onabanjo University. It is therefore recommended that the Federal Government should step up efforts to ensure that tertiary institutions (federal and state owned) are adequately funded through TET FUND so that staff salaries and other staff related matters which have been a major source of industrial conflict and disharmony is addressed.

Key words:

TET FUND Interventions, Infrastructural Development, Staff Development, Industrial Peace, Ogun State.

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DOI:
1. Introduction

Higher education also referred to as post-secondary or tertiary education is the education given after secondary education in colleges of education, monotechnics, polytechnics, universities and those institutions offering correspondence courses (Federal Government of Nigeria, 2004). Considering the above definition by the Federal Government of Nigeria, it is therefore safe to refer to higher education as a fundamental driving force for acquisition of knowledge and development of human capital needed for the progress of Nigeria. This fact is corroborated by Peremotode (2007) who sees higher education as the facilitator, the bed rock, the power house and the driving force for the strong socio-economic, political, cultural, healthier and industrial development of Nigeria. On the other hand, industrial peace is not the absence of disagreement in an organization or work place, but it is when there is understanding between employers and employees that permits the system to achieve set goals. Industrial peace enhances labour productivity and in turn improves performance in the industrial sector, achieving economic growth and enhancing living standards and quality of life. According to Onyeizugbe, Aghara, Olohi and Chidiugo (2018), industrial peace is a situation where employers and employees cooperate willingly in pursuit of the organization’s aims and objectives.

Higher education is generally seen as a major catalyst for human and capital development in Nigeria, in particular through its traditional missions of teaching, research and community services. However, from 1980 the decay of all tiers of education due to lack of proper funding became monumental and this led to several cases of industrial unrest in the public tertiary institutions in Nigeria. This has resulted in poor education outcomes especially in tertiary institutions where students stay more than the required number of years on their programmes not for lack of scholarship on the part of the students but due to incessant industrial actions and lack of industrial peace in these tertiary institutions. Academic Staff Union of Universities (ASUU) has always been in the forefront of the struggle to force the government to be alive to their responsibilities, citing infrastructural decay and lack of human capital development in these tertiary institutions as their major concerns. Private Universities sprang up to address this funding problems and lack of industrial peace in the country. To solve the problem of lack of industrial peace, they refused unionization of their workers.

According to Okoli (2006) the Nigerian government has failed to meet the recommended 26% of local budget allocation to the education sector as laid down by the United Nation Educational Scientific and Cultural Organization (UNESCO). This
indicates that the tertiary institutions in Nigeria are grossly underfunded. In order to bridge the funding gap in Nigeria Universities, the Federal Government established Tertiary Education Trust Fund (TET FUND) to rescue tertiary educational system from total collapse. The question now is - has TET FUND been able to solve the problem of industrial peace in public tertiary institutions?

The main objective of this study was to examine the impact of TET FUND interventions on industrial peace in Olabisi Onabanjo University. Specifically, the study sought to realize the subsequent objectives:

1. To determine the impact of TET FUND intervention on infrastructural development in Olabisi Onabanjo University.
2. To determine the impact of TET FUND intervention on staff development in Olabisi Onabanjo University.
3. To ascertain the relative effect of TET FUND interventions on industrial peace in Olabisi Onabanjo University.

1.1 Research Hypotheses

The following hypotheses guided the study:

Ho1: TET FUND interventions have no significant impact on infrastructural development in Olabisi Onabanjo University.

Ho2: TET FUND interventions have no significant impact on staff development in Olabisi Onabanjo University.

Ho3: TET FUND interventions have no significant effect on industrial peace in Olabisi Onabanjo University.

2. Review of Literature

Nigerian University System has been plagued by incessant industrial disputes and disharmony for quite a very long time. This has made these institutions to be lagging behind others in the world. According to Webometrics (2020) the highest ranking university in Nigeria was University of Ibadan which ranked 1249th in the world. The poor state of Nigerian higher education is amplified by Asiyai (2013) who lists inadequate funding, inadequate teaching staff/poor quality teaching staff, poor policy implementation, lack of resources, frequent labour disputes among other factors responsible for the condition which Nigerian higher education now find itself. According to Okoro and Aguguam (2017), the educational state of Nigeria is visibly poor; however, some measures could be taken to turn the tide. The above assertion confirmed the poor state of Nigerian higher education system.
Offem, Anashie and Aniah (2018) confirm that the history of strike actions which gave birth to industrial disharmony and industrial disputes in Nigerian tertiary institutions date back to 20th May, 1980 when a trade dispute was declared with the Governing Council of Universities in Nigeria which demanded among other things, improved funding of the universities, academic freedom, university autonomy as well as setting up of a special body to review the conditions of service of staff of the universities. Since that time, universities in Nigeria have been afflicted with industrial disharmony and industrial disputes which made industrial peace a mirage in these tertiary institutions. According to Wahab (2018) the Academic Staff Union of Nigerian Universities (ASUU), the principal union and a major stakeholder in the tertiary institutions in Nigeria, has been on major strike fourteen times from 1999 to 2018. This clearly underscores the fact that these institutions have not been at peace industrially for most of these periods.

The effects of these strikes actions and the resultant industrial disharmony include stagnated physical and academic development of these tertiary institutions. According to Amadi and Urho (2015) most academic activities for school year are distorted and this becomes a major cause of production of unqualified graduates who are deficient in their field of study. In addition, Oladipo (2012) posits that strike would result in the academic calendar being compressed and part of the curriculum skipped, some topics would not be treated and the students would have to write their examinations without adequate preparations thereby occasioning poor academic performance and decline in quality of education.

According to Chinedu (2018), the consequences of industrial disharmony include disruption of academic calendar. There are irregularities in virtually all the academic calendars of Nigerian tertiary institutions. Many public universities and polytechnics have lost one or two academic sessions. Consequently, four-year courses often extend to five or six years as a result of closure of schools which emanated from industrial strike.

According to Okoye and Udoudo (2015), the empowerment of human resources with appropriate skills is important to curb the increasing rate of social vices and ills and therefore, the negative repercussions of joblessness. The necessity for strategies to enhance service delivery in the Nigerian universities has necessitated the call for strategies to improve upon their human resources which will, in turn, improve industrial peace. Human resources are essential in the running of organizations. An organization can have in its possession all the money and the materials needed, capable hands that can run the outfit will still be needed. Human resources are therefore the most essential of the three resources an organization needs. Nwankwo
(2000) also submits that human resources are the highest asset of any organization, because no matter the amount of capital invested in an organization, its success or failure is largely based on the quality of people who run the organization.

Human resources and its management are all about the people in the organization. Hence people and how they are managed are becoming more important because many other sources of competitive success are less powerful than they are used to. However, recognizing that the basis for competitive advantage is essential to developing a different frame of reference for considering issues of human resource as strategic, because human resource aims to ensure that there is retention of the skilled, committed and well-motivated workforce it needs. This means taking steps to assess and satisfy future people’s needs and to enhance and develop their inherent capacities – their contributions, potential and employability – by providing learning and continuous development (Eme and Anyadike, 2014).

Of all the resources used in an organization, to accomplish the set goals and objectives, human resource is the most, difficult to handle because of the unpredictable and complex nature of man. Organization put different people with different attitudes, interests and desires together to work. Therefore, there is a high tendency that they will most of the time be at cross purposes. Although, it is understandable to the management and the staff of an organization that the two arms need to work harmoniously together for the attainment of the organizational goals, this expectation, however, is not always fulfilled in practice, because the departments, units or groups share scarce resources or work activities and have different status, goals, roles values and perceptions.

In essence, when needs are not met, there is bound to be disharmony. Notably, a university is a system that holds a group of individuals with different backgrounds and characteristics, and as such, achieving an environment devoid of grudges and grievances is quite difficult. According to Iwanbe (2002), most organizations are either indifferent to information meant for workers or they communicate in a haphazard manner so that the intended message never reaches the employees or students (in the case of school organizations) in a manner they can properly decode. This in turn mars the communication machinery of the school or organization and the school fails to realize its set goals and objectives. It is in this way that inadequate communication in a school setting can breed misunderstanding, suspicion, mistrust, rumours, and ultimately, conflict or crisis.

In recent times, Nigerian educational institutions have experienced disharmony, instability and other forms of industrial conflict. This situation has resulted in low productivity in the schools. Most of these problems have been as a result of poor
communication (Enyi, 2001). According to Nworgu (2005), most Nigerian universities have experienced a series of crises caused by poor communication between students and university administrators. The universities like other modern institutions are not without discord, incompatible objectives and response to issues concerning the welfare of employees, which are viable sources of dispute. This can later lead to wider industrial actions if not well handled; might be counter-productive and give rise to inefficiency, ineffectiveness or mental stress in the achievement of stated organizational goals and objectives.

Igbaji (2009) further submits that industrial dispute has become a focal concept in the industrial relations system. While threats of strike cannot be absolutely prevented, conflicts or misunderstandings that often emanate from it can be well managed. Tertiary institutions which include universities, polytechnics and colleges of education had been locked up indefinitely and some students got pregnant or derailed by engaging in all manner of vices like internet fraud or scam as a result of unresolved industrial dispute bothering on minimum wage, poor funding of tertiary institutions and failure on the part of government to implement an agreement between it and unions.

The roles of the government in enhancing industrial peace in the universities in Nigeria have received wide attention in the literature of industrial relations. This is because many organizations in Nigeria are saddled with lots of industrial challenges occasioned by inefficient and ineffective management style or strained relationship between management and labour unions (Osamwonyi and Ugiagbe, 2013). Consequently, productivity in most organizations has comparatively been hampered, thanks to frequent industrial conflicts.

Udeajah (2001) notes that when the acceptable organ does not provide the specified information, substitute communication develops in the form of rumours, gossip and falsehoods. These, in turn, have the potential to generate conflict within the institution. Thus, Nworgu (2005), observes that conflicts between groups can be an indication of a lack of effective communication and positive interaction. On the other hand, when used properly communication has the capacity to enhance the prompt detection of internal strain, prevents conflict situations and subsequently increases worker productivity.

Industrial peace is not the absence of disagreement, but it is when there is understanding between employers and employees that permits the system to achieve set goals. Industrial peace enhances labour productivity and in turn improves performance in the industrial sector, achieving economic growth and enhancing living standards and quality of life. Further, industrial peace creates a peaceful working
environment conducive to tolerance, dialogue and other alternative (to strike) means of resolving industrial or labour disputes in Nigeria (such as negotiation, mediation, arbitration, conciliation and litigation or court adjudication). This creates a high level of employee satisfaction. Suggestively, the imperatives of industrial peace are the most potent panacea in a developing economy like Nigeria, for a productive system and sustainable human development (Onasanya, 2009).

It would seem to follow naturally that if more individuals are educated, the wealth of the nation would rise, since more education attracts higher wages and aggregates of higher national income. It is also believed that if there are positive externalities of education, national income should increase by even more than the sum of the individual benefits. Believing that education is an agent of change in Nigeria has resulted into heavy investment in it, and therefore leaving of infrastructural and other capital developments to the institutions through TET FUND interventions.

In recent times, industrial crisis is assuming unprecedented proportion in Nigeria. According to Agba, Ushie and Agba, (2009), the incessant crisis in the private and public sectors has more than ever before been publicized in the manifestation of negative consequences which have shown stunted economic growth, irregular school calendar and poverty. Albert and Yahaya (2013) lent credence to this view, that the pattern of industrial relations in Nigeria has been conflictual in nature with disruptive consequences and significant work-stoppages. Various reasons and explanations have been adduced as to why the relationship between labour and management is conflict ridden.

Iheriohanma (2007) submits that management practice of exclusionism, neglect of power sharing mechanism which ensures partnership amongst stakeholders in the workplace and derogation of organizational communication pattern may breed disharmony in contemporary organizations. In an effort to find a solution to the alarming rate of industrial conflicts in the universities, government has evolved various strategies to check-mate the unprecedented rate of industrial disharmony in the universities through TET FUND in order to finance educational resources.

For almost 40 years before now, it was clear that from primary to secondary and tertiary levels, there was the urgent need for funding to improve infrastructural and other capital developments of tertiary institutions and also take care of the welfare of workers in these institutions and generally create an enabling environment for conducive teaching and learning for the future. According to Ugwoke (2013), traditionally, public funding of education is either directly in the form of teachers’ salaries, instructional materials and general infrastructure or indirectly through subsidies to households in the form of tax reductions, scholarships, loans and grants.
The main sources of fund had always been federal and state taxes, royalties and sale of crude oil, import and export duties and later since 1994 value added tax.

With all the above problems staring the government at the face, it then came up with a panacea for finding solutions to shortage of funding which is a major source of industrial conflict in public universities and Education Tax Fund (ETF) was conceived and born.

The Federal Government of Nigeria under President Ibrahim Babangida mindful of the reality of the situation took measures to arrest the rot. In December 1990 the Federal Government constituted the Gray Longe Commission on the Review of Higher Education in Nigeria to review the post-independence Nigerian Higher Education after Lord Ashby’s Commission of 1959. The Longe Commission recommended the funding of upper education through tax which will be borne by companies operating in Nigeria. An implementation committee under the chairmanship of Professor Olu Akinkugbe was also put in place. An agreement was entered into by both the Federal Government of Nigeria and ASUU in 1992 specifically on the problems of funding of universities. In January 1993, the Education Tax Fund Act No7 of 1993 was promulgated alongside other education related Decrees. The Decree imposed a 2% tax on the assess-able profits of all companies in Nigeria.

The Federal Inland Revenue Services (FIRS) assesses and collects the tax on behalf of ETF. The funds are allocated for the overall improvement of education in all Federal and State tertiary institutions specifically for the supply and maintenance of:

• Essential physical infrastructure for teaching and learning
• Institutional material and equipment
• Research and publications
• Academic staff training and development and
• Any other need which, in the opinion of the Board of Trustees, is critical and essential for the improvement and maintenance of standards in the higher educational institutions (TET FUND, 2014).

This mandate was faithfully discharged between 1999 to May 2011 when the Education Tax Act was repealed and replaced by the Tertiary Education Trust Fund Act, due to lapses and challenges in operating the Education Trust Fund. According to Bamiro (2012), these lapses and challenges include:

• The ETF was overburdened and overstretched and could only render minimal support to all levels of public educational institutions in Nigeria;
• Duplication of functions and mandate of other Agencies was found out after the coming of ETF, like Universal Basic Education (UBE) and Millennium Development Goal (MDG)
• The decay, rot and dilapidation of facilities issues within the tertiary education continued to be irritating as funds are only thinly spread.

The Federal Government Revenue Service Agency (FIRS) is empowered by the Act to assess and collect Education Tax. The fund see to it that the tax imposed by the Act is collected and ensure disbursements to educational institutions at federal, state and local government levels. It also monitors the projects executed with the funds allocated to beneficiaries. The mandate of the Fund as provided in Section 5(1) (a) to (g) of the Act No. 7 is to administer and disburse the quantity within the Fund to Federal, State, and Native Government Educational Institutions, including primary and secondary schools, for the other matters ancillary thereto, but specifically to the following: work centres and prototype development, staff development and conference attendance, library systems at the different levels of education, research equipment procurement and maintenance, Higher Education Book Development Fund.

This was generally considered as a the much needed solution to handle the problems of funding to rehabilitate decaying infrastructure, restore the lost glory of education and confidence within the system and also consolidate the gains, build the capacity of teachers and lecturers and ensure teachers’ development.

3. Methodology

For the purpose of this research work, a descriptive survey research design was adopted and made use of quantitative data to elicit information on impact of TET FUND interventions on industrial peace. To this extent therefore, the researchers made a representation by reporting the situation as they occur without manipulation of the variables. The population for this study covered all the teaching and non-teaching staff of Olabisi Onabanjo University, Ago-Iwoye, Ogun State with the population of 1,723 which comprised of 540 teaching staff and 1,183 non-teaching staff. To arrive at the sample size of the respondents used for the qualitative data collection, the formula below was employed.

\[ n = \frac{z^2pq}{d^2} \]

where
n = the desire sample size
z = the quality normal deviate was 1.96
p = the prevalent of TETFUND intervention = 0.10 (assumption)
q = 1.0 – p = 1.0 – 0.10 therefore q = .90
d = degree of accuracy desired was 0.05.
For this study, p was set at 90%

\[
n = \frac{(1.96)^2 (0.10) (0.90)}{(0.05)^2}
\]

\[
n = \frac{3.8417 \times 0.10 \times 0.90}{0.0025} = 0.345753
\]

= 138

Secondary data was used as a means for data collection to examine the rate at which TET FUND Intervention was released to tertiary institutions between 2010 and 2015. The use of secondary data was to ensure that data collected is easy to analyze through the Statistical Packages for Social Sciences (SPSS). Primary data was also used to elicit response from the respondents. The questionnaire was designed to elicit background information. It contained 20 items; these items were carefully framed with a view to eliciting useful information from 258 respondents who indicated the intention to participate in the study. The questionnaire was divided into two parts. Section A requested for the demographic data of the respondents e.g. sex, age group, qualification, occupation, years of experience that made provision for demographic variables of the respondents while the second part requested for information on industrial peace. In an attempt to determine the reliability of the questionnaire, a test-retest with two weeks interval was carried out. The instrument was administered on 20 respondents who are not part of the main study. The result was used to determine the strength of the instrument. The data was analyzed using regression analysis at 0.05 level of significance.

4. Results and findings

Hypothesis One: TETFUND interventions have no significant impact on infrastructural development in Olabisi Onabanjo University, Ago-Iwoye, Ogun State, Nigeria.
Regression analysis of TETFUND interventions and infrastructural development in Olabisi Onabanjo University

Table 1

Regression analysis of TETFUND interventions and infrastructural development in Olabisi Onabanjo University

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>F</th>
<th>Sig</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>63882.321</td>
<td>1</td>
<td>63849.230</td>
<td>57.326</td>
<td>.026</td>
<td>Reject H0</td>
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<td>Residual</td>
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<td>38764.749</td>
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<td></td>
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<tr>
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<td>21890.192</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictor: TETFUND interventions  
b. Dependent Variable: Infrastructural Development

The result in Table 1 indicated that TET FUND interventions have significant effect on infrastructural development (R = .870; R² = .7569; F (1, 4) = 57.326; P > .05). This result showed that TET FUND interventions accounted for 75.69% of the total variance in infrastructural development in Olabisi Onabanjo University. The null hypothesis which stated that TET FUND interventions have no significant impact on infrastructural development in Olabisi Onabanjo University was therefore rejected. This result showed that TET FUND interventions had significant impact on infrastructural development in Olabisi Onabanjo University.

Hypothesis Two: TETFUND interventions have no significant impact on staff development in Olabisi Onabanjo University, Ago-Iwoye, Ogun State, Nigeria

Table 2

Regression analysis of TET FUND interventions on staff development in Olabisi Onabanjo University

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>F</th>
<th>Sig</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>23671.391</td>
<td>1</td>
<td>23673.691</td>
<td>53.5</td>
<td>.040</td>
<td>Reject H0</td>
</tr>
<tr>
<td>Residual</td>
<td>17632.608</td>
<td>4</td>
<td>44081.521</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>19954.554</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictor: TET FUND interventions  
b. Dependent Variable: Staff Development
The result in Table 2 indicated that TET FUND interventions have significant impact on staff development in Olabisi Onabanjo University (R = .744; R² = .553; F (1, 4) = 53.5; P < .05). This result showed that TET FUND interventions accounted for 55% of the total variance in staff development in Olabisi Onabanjo University. The null hypothesis which stated that TET FUND interventions have no significant impact on staff development in the Olabisi Onabanjo University was therefore rejected. This result showed that TET FUND interventions had significant impact on staff development in Olabisi Onabanjo University.

**Hypothesis Three:** TET FUND interventions have no significant impact on industrial peace in Olabisi Onabanjo University, Ago-Iwoye, Ogun State, Nigeria

**Table 3**

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>F</th>
<th>Sig</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>50713.392</td>
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<td>50713.392</td>
<td>19.421</td>
<td>.049</td>
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<tr>
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<td>70368.000</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. **Predictor:** TET FUND Interventions  
b. **Dependent Variable:** Industrial Peace

The result in Table 3 indicated that TET FUND interventions had significant impact on industrial peace in Olabisi Onabanjo University (R = .348; R² = .121; F (1, 4) = 19.421; P < .05). This result showed that TET FUND interventions accounted for 12.1% of the total variance in industrial peace in Olabisi Onabanjo University. The null hypothesis which stated that TET FUND interventions have no significant impact on industrial peace in Olabisi Onabanjo University was therefore rejected. This result showed that TET FUND interventions had a significant impact on industrial peace in Olabisi Onabanjo University.

These findings confirmed that TET FUND interventions have really accelerated growth and development of infrastructures in Olabisi Onabanjo University, Ago Iwoye. From the result of the test of hypothesis one, it was revealed that TET FUND interventions accounted for 75.69% of the total variance in infrastructural
development in Olabisi Onabanjo University. The null hypothesis which stated that TET FUND interventions have no significant impact on infrastructural development in Olabisi Onabanjo University was rejected. This result showed that TET FUND interventions had a significant effect on infrastructural development in Olabisi Onabanjo University.

This finding is in agreement with earlier studies conducted by Bamiro (2012), the study indicated that TET FUND’s normal interventions in the tertiary institutions are in the following areas:

- Construction and Rehabilitation of buildings and Laboratories
- Procurement of teaching and research facilities
- Academic staff training
- Research and book development
- Capacity building and teacher training Programme
- Provision of ICT infrastructures
- Development of facilities that sustains institutions such as boreholes, electric power generation and many other more.

Bamiro and Olugbenga (2010) affirm that noteworthy is the significant effect of TET FUND in the area of capacity building through which from 2008 till date some junior academics have been sponsored with TET FUND both abroad and in Nigerian Universities in various areas spanning Medicine, Law Sciences, Technology, and other discipline.

From the above, it is evident that in no small measure TET FUND has positively impacted Olabisi Onabanjo University in the area of construction of buildings; procurement of library facilities cum books and journal; research and training of staff for better performance; provision of cars to facilitates and improve learning; provision of ICT infrastructures and so on since its inception.

With TET FUND interventions coming in at regular interval, the University which was initially plagued with paucity of fund and regular industrial strike actions has been able to enjoy uninterrupted industrial peace in the last eight years. The University has been able to complete its academic calendar at normal time leading to the regular convocation ceremonies for her graduates.

5. Recommendations

The following recommendations are made based on the above findings and conclusion:

1. Considering the fact that TET FUND is a Federal Government effort at solving the problem of funding in tertiary institutions, state government should also
step up efforts at ensuring that their tertiary institutions are adequately funded so that salaries and other staff matters can be addressed. This is against the backdrop that, by legislation and procedures TET FUND interventions cannot be used to pay staff salaries which has always been a major source of industrial disharmony in these tertiary institutions.

2. TET FUND should do more in the area of human resources development for the research and academic growth of government owned tertiary institutions in Nigeria.

6. Conclusion

The impact of the TET FUND interventions in Olabisi Onabanjo University (OOU) cannot be overemphasized. An x-ray of the various projects implemented by the TET FUND interventions indicates that since the inception of the scheme in Olabisi Onabanjo University there has been a massive improvement in the infrastructural development in the institution. It has significantly reduced the incessant strike that bedevil the university academic programmes. Academic calendar is not being disrupted as before which is an indication of industrial peace and harmony.

This study was limited to Olabisi Onabanjo University, a public owned university in Nigeria. It is instructive to note that there are other institutions in Nigeria that are also categorized as tertiary institutions. These include colleges of education, monotechnics, polytechnics and other vocational centres proving educational services beyond secondary education. Similar researches could also be carried out to cover other categories of tertiary institutions in Nigeria.

References


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✓ Bibliographic sources (references).

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✓ The papers should be written without any handwriting and crossing out words, in good Bulgarian and, respectively, English.

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