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BOARD DIVERSITY AND SUSTAINABILITY REPORTING: EVIDENCE FROM INDUSTRIAL GOODS FIRMS

Saidu MUSA¹, Nusirat Ojuolape GOLD², Hope Osayantin AIFUWA³

¹ Department of Accounting and Finance, Kwara State University, Malete, Kwara State, Nigeria. E-mail: musasaidu.aca2010@gmail.com
² Department of Accounting and Finance, Kwara State University, Malete, Kwara State, Nigeria, E-mail: nusiratgold@gmail.com
³ Department of Accounting, Faculty of Management Sciences, University of Benin, Benin City, Edo State, Nigeria. E-mail: aifuwahopeosayantin@gmail.com

JEL: M10, M14, M41, M48

Abstract

The sustainable development goals (SDGs) adopted by all the United Nations member countries were to reduce the social and ecological outcome of businesses and governments across the globe, among others. Businesses can key into this agenda by disclosing their economic, environmental and social impact in their financial reports. However, in Nigeria, the extent of sustainability reporting amongst firms is still low and not a listing requirement. Against this backdrop, this study investigated the influence of a diverse board on the extent of sustainability reporting in listed industrial goods firms on the Nigerian Stock Exchange from the period 2014-2018. We developed a sustainability disclosure index using the Global Reporting Initiative (GRI) guidelines to score the information content of annual reports relating to sustainability performance. Nationality, age and educational level were used to proxy diversity in the boardroom. The study also used descriptive and inferential statistics to summarize the data and to draw an inference on the population studied. Our study failed to validate the theoretical framework - Stakeholder-Dependency Theory used in the study, as results from the panel least squares regression revealed that age diversity in the boardroom negatively and significantly affects the extent of sustainability reporting. Furthermore, we found no evidence on the nexus between nationality diversity and sustainability reporting; and education level diversity and sustainability reporting. The study concluded that diversity in boardroom influences the extent of sustainability reporting in Nigeria. This study recommends that firms should increase the representation of foreign directors in the boardroom because they add value and a wealth of experience to the board.

Key words:
Nationality diversity; Age diversity; Education level diversity; Sustainability Reporting; Global Reporting Initiative, Nigeria.

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1. Introduction

Sustainability Reporting (SR) is an emerging voluntary reporting initiative across the globe in recent times. The idea was brought into the limelight following the 1987 Brundtland Report in bridging the gap between environmental and human development concerns (Bebington, & Larrinaga, 2014; Bebington, & Unerman, 2017). The concept was further popularised in academic literature and business environment following the United Nation's (UN) adoption of the Organization for Economic and Community Development's (OECD) eleven (11) Millennium Development Goals (MDGs) which was transformed into Seventeen (17) Sustainable Development Goals (SDGs) in 2015 (Bebington, & Unerman, 2017; UN SDG, 2015). The SDGs aim to address poor business and government's social, ecological and economic outcome. This poor businesses and government outcomes over time have resulted in the increased occurrences of natural disasters like flooding, earthquakes, and the increase in carbon emission as well as pollution (water and air), social inequalities and poverty (Chong, 2019; Manning, Braam & Reimsbach, 2019; Elaigwu, Ayoib & Salau, 2020). Hence, specifically, business firms in particular can contribute to the attainment of the goals through sustainability reporting.

However, it is sad to know that Sustainability Reporting (SR) has not been widely accepted or recognised as part of a business model for successful performance and survival by firms across the globe (Johari & Komathy, 2019). Although in 2019, Johari and Komathy (2019) observed that Europe had the highest sustainability disclosure rate of about forty-nine per cent, followed by Asia with fifteen per cent, North America fourteen per cent. They also observed the following disclosure rate: Latin America twelve per cent (12%), Oceania six per cent (6%) and Africa with the least disclosure rate of only four per cent (4%). The low compliance and disclosure rate could be attributed to the nature of the report – being voluntary. The nature of this report also makes the enforcement to lack regulatory and legal backing. In Nigeria, it is the same scenario: low compliance and disclosure rate of social and environmental issues among firms in the community where they operate (Adeniyi & Fadipe, 2018; Awodiran, 2019).

The board as one of the corporate governance mechanisms helps to protect the interests of business owners and other stakeholders. Their duty of overseeing and monitoring the reporting process makes them very important to the success and survival of a firm (Aifuwa & Embele, 2019; Saidu & Aifuwa, 2020). On sustainability reporting, a diverse board is far better in overseeing and monitoring the reporting of non-financial information of a firm (Michelon & Parbonetti, 2012). With their unique attributes, they
would improve the firm’s strategic decision quality and identify and fulfil stakeholders needs (de Jong & van der Meer, 2017; Michelon & Parbonetti, 2012).

Diversity in the boardroom comes in different dimensions (nationality, race, gender, education level, educational background; experience). However, in this study, we examined nationality, age and education level diversity. In line with the agency theory, a board with a high proportion of foreign directors will increase agency cost and may cause poor performance in firms (Masulis, Wang & Xie, 2016). Thus, this negates the aim of a firm to maximise profit and minimise cost. In age diversity, the presence of both young and old directors may limit the board information processing speed. Specifically, having older directors above sixty (60) years leaves a fragment of the board redundant. According to the Nigerian Constitution, the attainment of the retirement age of sixty (60) years means the individual becomes unproductive. Thus, employing unproductive people on the board will not improve the extent of sustainability reporting. Lastly, an inferiority complex could set in between directors with different levels of experience. It would hinder their board relationship in resolving agency problems and reporting sustainability issues.

In sum, the purpose of this study is to investigate the influence of a diverse board on sustainability reporting in Nigeria. The choice of our explanatory variables (nationality, age and educational level) motivated the study. There seem to be mixed findings on the nexus between nationality diversity in the boardroom and sustainability reporting (see Sharif & Rashid, 2014; Fuente, Garcia-Sanchez & Lozano, 2017; Zaid, Wang, Adib, Sahyouni & Abuhijleh, 2020; Huijsman, 2017; Hesselink, 2017; Janggu, Darus, Zain & Sogamoi, 2014; Rodriguez-Ariza, Garcia-Sanchez & Frias-Aceituno, 2012; and Khan, Khan & Semturk, 2019a; Ibrahim & Hanifah, 2016; Khan, Khan & Saeed, 2019; Berger, 2019). Also, there is a dearth in literature on the nexus between age diversity, educational level diversity in the boardroom and sustainability reporting (see Baker, Ghazali & Ahmad, 2019: King’ori, Naibe, Sand & Kipkosgei, 2019; Janggu, Darus, Zain & Sawani, 2014). Against these backdrops, this study raised the following research questions:

- What is the effect of nationality diversity in the boardroom on sustainability reporting?
- What is the impact of age diversity in the boardroom on sustainability reporting?
- What is the influence of educational level diversity in the boardroom on sustainability (reporting)?

The preliminary results of the study bolster the need for a large board size in listed manufacturing firms (specifically in the industrial goods sector) on the Nigerian
Stock Exchange to promote diversity on the board. This would also improve their sustainability disclosure rate. The result of the descriptive statistics in Table 2 reported means of approximately 42% sustainability disclosure rate with 19% of foreign directors. Also, about 35% of the directors on the board were below sixty (60) years of age, and 96% of them had a higher degree qualification (MSc and PhD). The result from the inferential statistic did not support the Stakeholder-Dependency Theory. The result of the association between *age diversity in the boardroom* and sustainability reporting is negative and statistically significant, which is contrary to our apriori expectation of a positive relationship. The result shows that the presence of older board members on the board will not promote the idea of sustainability reporting. The result, however, is not unexpected, looking at high profile environmentally and socially scandalous firms like British Petroleum (BP) oil spillage in the Gulf of Mexico, Chernobyl nuclear power plant explosion in Russia, Exxon Valdez oil spill in the waters of Alaska, Kuwait oil well fires and Lonmin Markana mining maltreatment of its workers in South Africa, to mention a few. The study made a modest contribution to the existing literature by showing that the influence of both boards demographic and cognitive diversity on sustainability reporting.

We organised the rest of the paper as follows: Section two focuses on the literature review and hypotheses development. Section three addresses the method with emphasis on theoretical framework and model specification. Section four presents data analysis, interpretation and discussion of findings. Section five concludes.

2. Literature Review and Hypotheses Development

**Sustainability Reporting**

According to Aifuwa (2020) and Aifuwa, Saidu, Enehizena and Osazevbaru (2019), sustainability reporting is a blend of two concepts: “sustainability” and “reporting”. Sustainability, as defined by Brundtland (1987), is meeting the needs of the current generation without compromising the ability of the next generations to meet their own needs. Reporting means disclosing an organisation's information fully or partially to stakeholders (Aifuwa, 2020). Therefore, sustainability reporting is disclosing organisational information about its daily economic, social and environmental activities as it affects the society and stakeholders where it operates. Global Reporting Initiative [GRI] (2019) defined sustainability reporting, performance or disclosure as the process whereby organisations provide information about the economic, environmental and social impact caused by its everyday
activities. Flowing from the GRI definition on sustainability reporting, visibly, there are enormous benefits to be derived from disclosing economic, social and environmental issues. Aifuwa et al. (2019) opined that the benefits of sustainability reporting include better financial performance, improved firm reputation, the attraction of better investors and high morale among employees.

However, despite these envisaged benefits, there are some issues in disclosing economic, environmental and social effects an organisation has on the environment. These issues include measurement and disclosure, motivation, enforcement and compliance, standardisation, and the comparability & reliability of the report (Muñoz, Zhao, & Yang, 2017). In Nigeria, sustainability disclosure rate is low among firms because of the voluntary nature of the report, and also not being a listing requirement for firms on the Nigerian capital market (Asaolu, Agboola, Ayoola, & Salawu, 2011; Emeka-Nwokoji & Osisioma, 2019; Haladu & Salem, 2016; Nwobu, 2017; Oyekwelu & Eke, 2014).

Notwithstanding the adoption of the GRI framework by the Nigerian stock exchange in 2018 and also the recognition of sustainability disclosure in the Nigerian code of corporate governance of 2018, there still exists a low compliance rate in disclosing environmental and social issues (Aifuwa et al., 2019). However, some countries like Brazil, China, Denmark, Hong Kong, India and Malaysia have made great strides in making the report mandatory (Ioannis & Serafeim, 2014). GRI seems to be the most popular framework in reporting sustainability issues (Johari & Komathy, 2019). However other frameworks or guidelines also exist, such as the Carbon Disclosure Project (CDP), International Standard Organization (ISO), Greenhouse Gas Protocol and United Nations Global Compact (UNGC), Sustainability Accounting Standards Board (SASB), International Integrated Reporting Council (IIRC) (Aifuwa, 2020; Aifuwa et al., 2019; Nwobu, 2017).

**Board Diversity**

The concept of ‘board diversity’ has emerged as the most prominent issue in corporate governance literature in recent times (Rhode & Packel, 2014; Ibrahim & Hanefah, 2016). Ayuso and Argandona (2009) and Van Knippenberg, De Dreu and Homan (2004) defined board diversity as the heterogeneity amongst directors on the board with unique attributes or dimensions. The dimensions of a diverse board can be grouped into observable difference (like race, ethnic background, nationality, gender and age) and less discernible diversity (educational level, educational background, functional and occupational background, industry experience and organisational membership) (Kang, Chen & Gray, 2007).
The importance of diversity in the boardroom cannot be overemphasised, as it fosters better decisions and brings about innovation in an organisation (Aifuwa & Embele, 2019). Kyaw, Olugbode and Petracci (2017) stated that a more diverse board could attract more resources into an organisation. Rathnayaka (2018) and Michelon and Parbonetti (2012) argued that a diverse board would improve the quality of a firm’s strategic decision. Furthermore, Arora and Sharma (2016) and Butler (2012) argued that diversity in the boardroom would improve a firm's performance and reputation, as also its global existence. Drawing inspiration from the above arguments, this study envisages that board diversity will positively affect sustainability reporting in firms. Therefore, in this study, we examined the impact of nationality, age and education level diversity on sustainability reporting.

**Board Member Nationality and Sustainability Reporting**

Nationality diversity reflects the presence of foreign directors of different nationalities in the boardroom. Oixelheim and Randey (2003) asserted that foreign directors are deeply devoted to the firm’s transparency, accountability and reputation in the competitive market. In line with this, Zaid et al. (2020) echoed that nationality diversity is one of the modern drivers of corporate sustainability reporting in the present-day business world. A board with a high representation of foreign directors from different nationalities brings a diverse idea and perspective to the boardroom (Ferrero-Ferrero, Fernandez-Izquierdo & Munoz-Torres, 2015). This is because of their international market engagement, diverse professional background, religion, language, life experience, knowledge and culture which may lead to improved decision making in particular (Ferrero-Ferrero et al. 2015), and enhanced boardroom performance (Estelyi & Nisar, 2016).

Notwithstanding the above assertions on the positive impact of the presence of foreign directors in the boardroom, Masulis et al. (2016) argued that a nationally diverse board would cause poor performance because of the high cost of foreign directors and ineffective monitoring oversight. Also, empirical literature evidenced no relationship between a nationally diverse board and sustainability reporting (Sharif & Rashid, 2014; Fuente et al., 2017; Zaid et al., 2020; Huijsman, 2017; Hesselink, 2017; Janggu et al., 2014; Rodriguez-Ariza et al., 2011). However, Khan et al., (2019a); Ibrahim and Hanifah (2016); Khan et al., (2019b); and Berger (2019) found a positive relationship between foreign directors on the board of an organisation and sustainability reporting. This study, therefore, hypothesises that;

**Ho:** Nationality diversity in the boardroom has no significant effect on sustainability reporting
Board Member Age and Sustainability Reporting

Age diversity reflects the existence of both old and young directors on the board. Darmadi (2011) asserted that age diversity in the board creates value and diverse views on the social economic and political environment in a firm. Ali, Ng, and Kulik (2014) argue that age diversity in the board leads to transfer of knowledge, skills and experience from older directors to younger directors, which may lead to better decision making and increased effectiveness in the board. Abdullah and Ismail (2013) emphasised the importance of age diversity in the board (and added) that it significantly reduces business in leadership and decision-making style of same age group members.

However, some studies claimed that boards comprising older directors are likely to disclose more non-financial information of a firm (Hasfı & Turgut, 2013; Post, Rahman & Rubow, 2011). They based their argument on the fact that age reflects the director's experience in business and that they are more sensitive towards social and environmental issues. Empirically, little or no studies have been carried out on the nexus between age diversity in the boardroom and sustainability reporting in Nigeria. Baker et al., (2019) found no significant difference between the ages of directors on the board to the extent of sustainability reporting, implying that age diversity in the boardroom does not bear a significant relation to sustainability reporting. Therefore, this study hypothesises that;

**Ho2: Age diversity in the boardroom has no significant impact on sustainability reporting**

Board Member Education Level and Sustainability Reporting

Diversity in the level of education on the board reveals the existence of directors with both low and high level of education. The presence of directors with different levels of education on the board leads to advanced thinking capacity. Hsu, Chen and Cheng (2013) assert that diversity in the level of education on the board improves the directors' ability and proficiency in processing information and recognising fresh business opportunities. Diversity in the level of education in the boardroom leads to the generation of alternative ideas on strategic issues on non-financial disclosure (Katmon, Mohamad, Norwani & Farooque, 2017). Khan et al. (2019b) argue that education level diversity of directors would help in solving the board's problem in a sophisticated and strategic directional manner. Therefore, directors with both low and high education qualifications would help the board to resolve economic, environmental and social issues in an organisation. However, it is sad that they have
done few empirical studies on the nexus between the education level diversity in the boardroom and sustainability reporting. King’ori et al., (2019) and Janggu et al. (2019) found that the education qualification of the directors on the board positively affects sustainability reporting. Thus; this study hypothesises that;

**Ho3: Education level diversity in the boardroom has no significant influence on sustainability reporting**

**Control Variables**

This study introduced two firm-specific variables to control the dependent variable. The variables are firm age and firm size. Haladu and Beri (2016) submitted that older firms are (more) socially and environmentally responsible than younger firms. Leaning on this empirical evidence, we envisage likewise in our study. Secondly, the size of the firm is another determinant of sustainability reporting. Prior studies have argued that a firm’s size positively affects the extent of sustainability disclosure (Hesselink, 2017; Ong, 2016, Aman & Baker, 2018; Awodiran, 2019; Hu & Loh, 2018). Thus, leaning on these empirical pieces of evidence, our study also envisages likewise.

3. Material and Methods

**Theoretical Framework**

This study hinges on the Stakeholders theory of (Freeman, 1984) and the Resource Dependency theory of (Pfeffer & Salancik, 1978) to explain and understand the influence of a diverse board on sustainability reporting in Nigeria. The Stakeholder theory explains the tripartite relationship that exists between the principal (owner of a firm), agent (managers/board of directors) and stakeholders (suppliers, local community, investors and the public) (Aifuwa, Embele, & Saidu, 2018). The theory addresses the expectations of specific stakeholder groups in society and considers the effect of their expectation on information disclosure, bearing in mind the existence of more powerful stakeholders (Font, Guix & Bonilla-Preigo, 2016; Ngu & Amran, 2018). Therefore, the survival of a firm's business hugely depends on the support of the stakeholders; hence, they must adjust their business model to address stakeholders' concerns and needs. To achieve this, we cannot ignore a diverse board. The Resource dependency theory stressed that the board as one of the vital resources in a firm has a significant impact on the strategic decision making and disclosing information (Pfeffer & Salancik, 1978; Hasfi & Turgut, 2013). Fasan and Moi (2016) argued that board members play a vital role in influencing information disclosure to minimise environmental uncertainties and external interdependency. Therefore,
line with the stakeholders and resource dependency theory, the principal of the firm must use the services of a diverse board to meet the needs of stakeholders in reporting the economic, social and environmental issues. Based on the unique qualities that diverse boards possess, issues on sustainability reporting will be resolved swiftly and increase the performance and reputation of the firm (Baker et al., 2018; Ngu & Amran, 2018). In line with the Stakeholder-Dependency theory, this study proposes that a diverse board will increase the extent of sustainability reporting.

### 3.1. Model Specification

In line with the theoretical framework of the study, we recognised sustainability reporting as a dependent variable. In contrast, board member nationality, age and education were identified as the independent variable of the study.

![Fig. 1. Schematic representation of the variables of the study](image)

Flowing from the theoretical framework and the existing literature, we specified the model as:

In functional form:

\[ SNR = f(BMN; BMA; BME; FAGE; FSZE) \]  

(1)

In econometric form:

\[ SNR = \beta_0 + \beta_1BMN_{it} + \beta_2BMA_{it} + \beta_3BME_{it} + \]
\[ + \beta_4FAGE_{it} + \beta_5FSZE_{it} + \epsilon_{it} \]  

(2)
Where
SNR = Sustainability Reporting;
β₀ = Constant;
BMN = Board Member Nationality;
BMA = Board Member Age;
BME = Board Member Education;
FAGE = Firm Age; and
FSZE = Firm Size.
β₁, β₂, β₃ = Coefficient of explanatory variables
ε = Standard error
i = Cross sectional (Companies)
t = Time Series
A priori expectations is in with the theoretical framework to be β₁, β₂, β₃, β₄, β₅ > 0

3.2 Development of Sustainability Disclosure Index (SDI)

We recognised sustainability reporting as the study's dependent variable. In developing the sustainability reporting index, we will use the GRI G4 general framework, which is made (of) economic, environmental and social indicators. Afterwards, we employed content analysis to develop weighted sustainability disclosure index for the economic, environmental and social performance of the sampled firms. If firms fully disclosed economic, environmental and social information, they were awarded one, while zero for non-disclosure, respectively.

Therefore, \[ \text{SNR} = \frac{\text{TD}}{M} \]

Where;
SNR = Sustainability Reporting
TD = Total disclosure (N₁ + N₂ + N₃)
N₁ = for the economic indicator i
N₂ = for the environmental indicator i
N₃ = for the social indicator i
M = Maximum possible score
### Measure of variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Type</th>
<th>Measurement</th>
<th>Supporting Scholars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainability Reporting</td>
<td>Dependent Variable</td>
<td>GRI G4 framework on economic, social and environmental sustainability disclosure; at stated above</td>
<td>GRI (2013); Anazonwu Egbunike &amp; Gunardi (2018)</td>
</tr>
<tr>
<td>Board Member Nationality</td>
<td>Independent Variable</td>
<td>Number of foreign directors sitting on the board divided by total number of directors</td>
<td>Anazonwu et al (2018)</td>
</tr>
<tr>
<td>Board Member Age</td>
<td>Independent Variable</td>
<td>Dichotomous index; 1 if the average age of the board of directors is less than 60 years, else 0.</td>
<td>Abdullah &amp; Ismail (2013); Baker et al (2019).</td>
</tr>
<tr>
<td>Board Member Education</td>
<td>Independent Variable/</td>
<td>Dichotomous index; 1 if the board has directors with second or third degree, else, 0</td>
<td></td>
</tr>
<tr>
<td>Firm Age</td>
<td>Control Variable</td>
<td>Number of years since the time the company was quoted on the floor of the Nigerian Stock (Exchange)</td>
<td>Emeka-Nwokeji &amp; Osisioma (2019)</td>
</tr>
<tr>
<td>Firm Size (FSZE)</td>
<td>Control Variable</td>
<td>Natural logarithm of total assets</td>
<td>Aifuwa &amp; Embele (2019); Saidu &amp; Aifuwa (2020); Aifuwa, Musa &amp; Gold (2020)</td>
</tr>
</tbody>
</table>

**Source:** Authors’ Compilation, 2020.

### 3.3. Research Design

This study adopted the multi-method quantitative research design. We chose this design in the study because it is inclined on the positivist research philosophy and deductive approach. Also, it examines relationships between variables measured numerically and analysed using a range of statistical and graphical techniques (Saunders, Lewis & Thornhill, 2016).
3.4. Method of Data Collection and Analysis

The population comprises manufacturing firms on the Nigerian Stock Exchange. The target population of the study was the industrial goods sector listed on the Nigerian Stock Exchange as of December 2018. We preferred these firms because their activities revolve around the three dimensions of sustainability reporting (Awodiran, 2019). This study sampled all thirteen (13) companies in the sector to have a sound basis for generalisation (Aifuwa & Okojie, 2015). The study also utilised secondary data (audited financial statements) from the Nigerian Stock Exchange spanning from 2014 to 2018. Descriptive and inferential statistics were used to analyse data. The Panel least squares were used to test hypotheses stated because the data include properties of time-series and cross-sectional data.

4. Data Presentation, Analysis and Discussion of Findings

**Table 2**

<table>
<thead>
<tr>
<th></th>
<th>SNR</th>
<th>BMN</th>
<th>BMA</th>
<th>BME</th>
<th>FAGE</th>
<th>FSZE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean</strong></td>
<td>0.4242</td>
<td>0.1927</td>
<td>0.3529</td>
<td>0.9608</td>
<td>28.9412</td>
<td>6.5788</td>
</tr>
<tr>
<td><strong>Median</strong></td>
<td>0.3333</td>
<td>0.0000</td>
<td>0.0000</td>
<td>1.0000</td>
<td>30.0000</td>
<td>6.3575</td>
</tr>
<tr>
<td><strong>Maximum</strong></td>
<td>0.7273</td>
<td>0.5900</td>
<td>1.0000</td>
<td>1.0000</td>
<td>44.0000</td>
<td>8.7897</td>
</tr>
<tr>
<td><strong>Minimum</strong></td>
<td>0.0606</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>5.0000</td>
<td>5.4186</td>
</tr>
<tr>
<td><strong>Std. Dev.</strong></td>
<td>0.1892</td>
<td>0.2191</td>
<td>0.4826</td>
<td>0.1960</td>
<td>10.3042</td>
<td>0.8634</td>
</tr>
</tbody>
</table>

*Source: Authors’ Computation, 2020.*

Table 2 presents the summary statistics about the sampled firms over the study period. The mean proportion of companies providing sustainability disclosures was 42.4% while companies with the highest disclosure had 72.7% of the GRI disclosures reported. The lowest disclosure recorded was 6%. The mean value of the proportion of foreign directors, directors' age, and level of education, firm age and firm size were 19.3%, 35%, 96%, 28 years and nine months and NGN 6,579,000 respectively. The highest value in the proportion of foreign directors, firm age and firm size was 59%, 44 years, and NGN 8,789,701,000 respectively. Lastly, the standard deviation in the ratio of foreign directors and the ages of directors did not exhibit considerable clustering around the mean.
The linearity of variables (correlation matrix) as presented in Table 3 show that the variables exhibited both positive and negative relationship. Nationality diversity and sustainability reporting (0.483), age diversity and sustainability reporting (0.173), education level diversity and sustainability reporting (0.180), firm age and sustainability reporting (0.411), firm size and sustainability reporting (0.617) and age diversity and sustainability reporting (-0.193). As seen in the matrix, the strength of the relationship between variables measured by the Pearson product-moment correlation showed that the association between the variables is relatively small and were below the threshold of 0.80, suggesting the absence of the problem of multicollinearity in the predictor variables (Studenmund, 2014)

4.1. Multivariate Analysis

This study presents the result of the Hausman test and the Partial Least Squares Regression in this section. The study tested the hypotheses at a 5% level of significance (that is if p-value < 0.05 reject Ho, else do otherwise).

Table 4

Hausman test of effect specification

<table>
<thead>
<tr>
<th>Test Summary</th>
<th>Chi-Sq. Statistic</th>
<th>Chi-Sq. d.f.</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section random</td>
<td>16.8242</td>
<td>5</td>
<td>0.0048</td>
</tr>
</tbody>
</table>

Source: Authors’ computation, 2020.
The table above shows the result of the Hausman test, \( \text{HM (5)} = 16.82, \ p = 0.0048 \). This study ignored the random effect model because the p-value was less than 5%. The study, therefore, accepted the fixed effect model of the Panel least squares regression.

\[
\text{Table 5}
\]

**Fixed effect panel regression**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0.8046</td>
<td>0.8089</td>
<td>0.9947</td>
<td>0.3267</td>
</tr>
<tr>
<td>BMN</td>
<td>0.1219</td>
<td>0.2646</td>
<td>0.4608</td>
<td>0.6478</td>
</tr>
<tr>
<td>BMA</td>
<td>-0.3012</td>
<td>0.0603</td>
<td>-4.9928</td>
<td>0.0000</td>
</tr>
<tr>
<td>BME</td>
<td>-0.0224</td>
<td>0.0725</td>
<td>-0.3088</td>
<td>0.7593</td>
</tr>
<tr>
<td>FAGE</td>
<td>0.0095</td>
<td>0.0082</td>
<td>1.1626</td>
<td>0.2529</td>
</tr>
<tr>
<td>FSZE</td>
<td>-0.0838</td>
<td>0.1369</td>
<td>-0.6122</td>
<td>0.5443</td>
</tr>
</tbody>
</table>

**Effects Specification**

| Cross-section fixed (dummy variables) | | | | |
|--------------------------------------|----------------|----------------|----------------|
| R-squared                           | 0.9236         | Mean dependent var | 0.4242         |
| Adjusted R-squared                  | 0.8909         | S.D. dependent var | 0.1892         |
| S.E. of regression                  | 0.0625         | Akaike info criterion | -2.4562       |
| Sum squared resid                   | 0.1367         | Schwarz criterion  | -1.8501        |
| Log likelihood                      | 78.6323        | Hannan-Quinn criter. | -2.2246       |
| F-statistic                         | 28.2220        | Durbin-Watson stat | 2.4661         |
| Prob(F-statistic)                   | 0.0000         | | | |

*Source: Authors’ computation, 2020.*

The result of the Panel least squares (fixed effect) revealed in Table 5 that board diversity influences sustainability reporting in Nigeria, as the F-statistic = 28.222, \( p = 0.0001 \). Also, the Adjusted R-Squared stood at 0.8909, that is about 89% of the systematic variation in the dependent variable is caused by the explanatory variable used in the study. In comparison, about 11% of the change is caused by other variables not included in the model but were adequately captured by the standard error of the regression, \( \text{SE} = 0.0625 \). The Durbin-Watson statistics of 2.46 indicates negative autocorrelation in the sample.

On the hypotheses, we found out that nationality diversity in the boardroom has a positive but insignificant effect on sustainability reporting, \( t = 0.4607, \beta_1 = \)
0.122, \( p = 0.648 \). This study failed to reject the null hypothesis stated. This result partially supports the resource dependency theory and disagrees with the argument of Masulis, et al., (2016) that a nationally diverse board will cause poor performance because of the high cost of foreign directors and ineffective monitoring oversight. Also, our finding is consistent with the work of (Sharif & Rashid, 2014; Fuente et al., 2017; Zaid et al., 2020; Huijsman, 2017; Hesselink, 2017; Janggu et al., 2014; Rodriguez-Ariza et al., 2011): they found no evidence on the nexus between a nationally diverse board and sustainability reporting. However, it sharply deviates from the findings of Khan et al., (2019a); Ibrahim and Hanifah (2016); Khan et al., (2019b); and Berger (2019) which found a positive and significant relationship between foreign directors on the board of an organisation and sustainability reporting.

Secondly, the study discovered that age diversity in the boardroom has a negative and significant impact on sustainability reporting, \( t = -4.992, \beta_2 = -0.301, \ p = 0.0001 \). Hence, the study failed to accept the null hypothesis stated in it. This result supports the position of the constitution of the Federal Republic of Nigeria that older directors (60 years and above) will (prove) non-productive on the board of an organisation. However, the study failed to agree with the stakeholder-resource dependency perspective that age diversity on the board promotes sustainability reporting. This finding is in dissonance with the work of Baker et al., (2019) (which) found no significant difference between the ages of directors on the board (in the effect) on the extent of sustainability reporting, implying that that age diversity in the boardroom does not have a significant relation to sustainability reporting.

On education level diversity, we found a negative and insignificant nexus on sustainability reporting, \( t = -4.992, \beta_3 = -0.301, \ p = 0.7593 \). This implies that educational level diversity of directors in the boardroom has no significant influence on sustainability reporting. This result supports the stakeholder-resource dependency perspective that diversity in the director's education level would promote sustainability reporting. Also, this result disagreed with the views of Khan et al., (2019b) that education level diversity of directors would help in solving the board’s problem in a sophisticated and strategic directional manner. Also, this finding is in contradiction with the studies of King’ori, et al., (2019) and Janggu et al., (2014). They submitted that the education qualification of the directors on the board positively affects sustainability reporting. Lastly, firm age and firm size were statistically not related to sustainability reporting, \( t = 1.162, \beta_4 = 0.0095, \ p = 0.253 \) and \( t = -0.612, \beta_5 = -0.083, \ p = 0.5443 \) respectively.
5. Conclusion and Recommendations

The broad objective of this study was to examine the influence of a diverse board on sustainability reporting in industrial goods firms in Nigeria. Specifically, the study examined the impact of nationality, age and educational level diversity in the boardroom on the extent of sustainability reporting in the listed industrial goods firms in Nigeria. The descriptive statistics revealed that sustainability disclosure rate was about 42%, and the proportion of foreign directors was about 19%. Also, about 35% of the directors on the board were below sixty (60) years of age, and 96% of them had a higher degree qualification (MSc and PhD). Hence, owing to these findings in the result of the descriptive statistics, listed industrial goods firms will not be contributing to the attainment of the UN SDGs before 2030 as envisaged. This claim was further bolstered in our inferential statistics results. Based on the overall findings of this study, listed industrial firms must do more to change the current narratives, as regards their environmental and social performance. Hence, we, therefore, recommend that: firms should increase the representation of foreign directors in the boardroom because they add value and a wealth of experience to the board; the representation of younger directors should be increased in the boardroom to have a vibrant board, and firms should encourage more directors with a first degree in the boardroom to have a mix of knowledge resource.

This study is subject to some limitations. First, we only studied listed industrial goods firms in the manufacturing industry, thereby ignoring the unlisted industrial goods firms. Thus, generalisations should be made with caution. Secondly, the period studied – 2014-2018 may not accurately capture the subject of the study. This study, therefore, recommends that future research should cut across the other unlisted industrial goods firms and the period of study should be increased.

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CORPORATE GOVERNANCE AND VALUE RELEVANCE OF FINANCIAL STATEMENT OF NIGERIAN LISTED CONSUMER GOODS FIRMS

Jayeola OLABISI¹, Johnson Kolawole OLOWOOKERE², Lateef Ayodele AGBETUNDE³, Odumoye Ayomipo UREL⁴

¹ Department of accounting, Federal University of Agriculture, Abeokuta, Nigeria. E-mail: olabisij@funaab.edu.ng
² Department of Accounting, Osun State University, Nigeria. E-mail: Johnson.olowookere@uniosun.edu.ng
³ Department of Accounting, Yaba College of Technology, Lagos, Nigeria. E-mail: lateef.agbetunde@yabatech.edu.ng
⁴ Department of accounting, Federal University of Agriculture, Abeokuta, Nigeria. E-mail: odumoyeurel@yahoo.com

JEL: G32, 34

Abstract

The study assessed the association between corporate governance and value relevance of financial statement of Nigerian listed consumer goods firms. Historical data were generated from the financial statements of the 10 sampled firms over a period of 10 years (2010-2019). Random effects least squares technique was the estimation technique adopted. Corporate governance was measured with board composition, board due diligence, audit committee independence, board size and firm size, while market value of share was the surrogate for value relevance. The results of the study showed that board due diligence; audit committee independence; board size were relevant to market value of shares of sampled firms while board composition was not relevant. The study concluded that frequencies of meeting, audit committee independence and board size influenced market value of share. Hence, the study suggested that shareholders and regulatory bodies should incorporate identified relevant mechanisms of corporate governance.

Key words:

Board composition, Board due diligence, Audit committee independence, Board size, Nigeria.

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1. Introduction

The collapse of several multinational corporations all over the globe has shifted the notice of stakeholders to the importance of ways and manners the business affair is directed by those charged with the responsibility (Olabisi, Kajola, Oladejo, Ojeaga, & Abass, 2018). The corporate governance mechanisms imbued in an organization a key factor to the attainment of a high quality financial information that communicate to the investors the value of accounting statement (Soderstrom & Sun, 2007). The context of International Financial Reporting Standard (IFRS) expressly confirms that quality information must have various attributes like reliability, understandability, faith representation, relevance and comparability. Moreover, the introduction of IFRS has improved financial reporting only for firms with effective shareholders’ protection and company specific characteristics such as high quality corporate governance (Wang & Yu, 2008).

The parting of ownership from control has led to agency problem that makes information to be available to the management alone (information asymmetry). This is the root cause of agency conflict where agent is expected to satisfy the interest of principal but in many cases seeks self-interest. A strategy for lessening agency problem is to mitigate information asymmetry between the agent and principal. The provision of a high quality accounting information reduces information asymmetries between the agent and shareholders. Accounting information must faithfully represent the essentials of a business as a value creating unit. From the perspective of accounting standards, matters and concerns have been a subject of debate as to the quantum of quality of information the reporting entity’s financial statements should contain.

The corporate reporting system suggests a distinctive foundation for probing the effect of corporate governance devices on value relevance of accounting information. It has been observed that in Nigeria, corporate governance structure is somewhat weak when compared with US and UK (Ilyas, Farooq, Abid, and Abdul, 2016). In Nigeria, the corporate governance device is not so efficient like those of developed economy, and lacking ability to drive organization to monitor and take corrective steps to prevent firms’ failure. In this connection, there should be core governance mechanisms incorporated into the business affairs to improve value relevance.

Various studies such as Kajola, Olabisi, and Fapetu, (2019); Ilyas Farooq, Abid and Abdul (2016); Ahmad and Sallau (2018); and Soderstrom and Sun, (2007) have addressed internal governance mechanism such as gender diversity, board structure, board composition, board meeting, audit committee’s independence, audit committee
structures and quality of accounting information. The results of previous studies on how the relationship between corporate governance and opportunistic accounting affect the market value of share are inconclusive (Shehu & Abubakar, 2012). Hence, the major objective of the study is to examine the influence of corporate governance on value relevance of financial statement of Nigerian listed consumer goods firms. The specific objectives are to:

i. assess the relationship between board composition and value relevance of financial statement of Nigerian listed consumer goods firms;

ii. examine the influence of board due diligence on value relevance of financial statement of Nigerian listed consumer goods firms;

iii. assess the link between audit committee independence and value relevance of financial statement of Nigerian listed consumer goods firms; and

iv. examine the relationship between board size and value relevance of financial statement of Nigerian listed consumer goods firms.

1. Theoretical Framework

Corporate governance has been variously defined by previous researchers such as (Freeman 2004; Oman, 2001) among others. For example, Oman, (2001) describes corporate governance as a set of institutions, including laws, regulations and accepted business practices that govern the relationship between the agent and providers of funds. Corporate governance is the association that subsists among the participants in the industry. The major participants are the stakeholders and the board of directors. Stakeholders in any corporation include employees, suppliers, customers, lenders, regulators and the community at large (Olabisi & O moyele, 2011).

Stakeholder theory is entrenched in the field of management since 1970 and increasingly evolving through the integration of corporate accountability into the reporting systems (Freeman 2004). Wheeler, Colbert and Freeman (2003) argued that stakeholder theory was derived from the combination of sociological and organizational disciplines. Certainly, stakeholder theory is a fused theory and broader than research tradition, combining philosophy, ethics, political theory, economics, law and organizational science. Stakeholder theory is described as a group of people or individual that is affected by the liquidation of an organization (Ibrahim & Salihu, 2015).

Stakeholder theory unlike agency theory is a situation where managers work and strive to promote the welfares of stakeholders. Stakeholder theory proposes that managers in organizations have a responsibility to serve suppliers, employees and business partners. Sundaram and Inkpen (2004) proposed that stakeholder theory
protects deserving stakeholders. Whereas, Donaldson and Preston (1995) claimed that all groups participate in a business to obtain benefits.

Board composition is a major determinant of board of directors’ performance and is composed of insider and outsider members (Clarkson, 1995). Insiders are selected from the executive officers of the firm while outsiders’ relationship with firm is directorship. Central Bank of Nigeria (CBN) Code of Corporate Governance (2006) affirms that majority of board members should be non-executive directors, and at least two (2) non-executive board members are to be independent directors. They do not represent any particular shareholding interest and hold no special business interest but are appointed on merit (Ahmad & Sallau, 2018).

Board due diligence describes the board meeting and attendance (Kajola, Olabisi and Fapetu, 2019). Board meeting is any organized assembly of directors where important issues are discussed and decisions made. Organization issues relating to previous, current and future predicament and anticipated matter that concern company survival (going concern) are discussed and resolved. Board meeting provides an effective medium for coordination of opinions to achieve firms’ goals. Every resolution passed during the meeting is legal and operational by the company. Francis, Hassan and Wu (2012) argue that a firm with infrequent meeting and poor attendance of directors performs poorly. According to Ilyas, Farooq, Abid, and Abdul, (2016), regular meetings enable directors to discuss issues thereby strengthening cohesive bonds among members. However, the opposing view of board meeting believes that it is costlier and disadvantageous in terms of travelling expenses, refreshments and allowances (Olabisi & Omoyle, 2011).

The code of best practice of corporate governance in Nigeria requires absolute independence of audit committee, highly competent with a high level of integrity to objectively review the work done by the external auditors. Ilyas, Farooq, Abid, and Abdul, (2016) submitted that, the familiarity developed from lengthy auditor tenure is considered an internal mechanism that, monitors the business operations so that management can serve the best interests of shareholders and other stakeholders. The auditors’ independence is the proportion of total income of an audit firm accounted for by client suspected to have contributed to the erosion of auditor independence (Ibrahim & Salihu, 2015). In order to restore public confidence on accounting information, policies such as mandatory rotation of audit firm, prohibition and disclosure of certain non-audit services are to be initiated by regulators and accounting bodies in the US, Nigeria and elsewhere (ACT, Sarbanes Oxley, 2002).

Mungly, Babajee, Maraye and Seetah (2016) argued that a firm with small board size is able to produce a good financial report as directors can interact better and
improve the information content and reduces the practice of earnings management. Yemack (2006) cited in Velnappy, (2013) argues that large board room slow down decision and constitute obstacle to urgent decisions and changes. A firm with small board size rarely criticizes the policies of top managers and less effective (George & Karibo, 2014). On the other hand, large board is supported on the ground of providing greater monitoring and advice (Singh & Harianto, 2014). Fama and Jensen (1983) posit that large boards improve board performance by reducing CEO dominance. Brown and Caylor (2004) submitted that a board size of six to fifteen memberships is the most ideal for efficient recital. However, Conger and Lawler (2009) assert that there is no ideal size for a board and the right size for any board should be driven by effectiveness of the board to quickly take judicious decisions that benefit the business.

Balagobei, (2018) examined the impact of corporate governance on the value relevance of accounting information of listed hotels and travels in the Colombo Stock Exchange. Twenty listed companies were analyzed for a period of five years from 2012 to 2016. The study revealed that board independence and ownership structure have a negative and significant influence on value relevance of financial information of listed hotels and travels in Sri Lanka while firm leverage has a negative influence.

Habib and Azim (2008) examined the relationship between corporate governance and the value-relevance of accounting information in Australia. The regression results showed that firms with a strong governance structure manifest a higher value-relevance of accounting information. Furthermore, the results showed that firm-specific economic variables are significant factors of the value-relevance of accounting information.

Ogeh and Fiador (2013) examined how internal mechanisms of corporate governance, affect the value relevance of reported accounting earnings of listed firms on the Ghana Stock Exchange. The study adopted Ohlson (1995) valuation model with a panel dataset, random effects regression model. The results indicated that net asset value per share is value relevant on the Ghanaian market, and even more so when the board size is small or the CEO also doubles as the board chair. Board independence represented by the percentage of non-executive directors on the board is not significant in the market valuation of shares, and when significant has a negative effect.

Kajola, Olabisi and Fapetu (2019) investigated the relationship between the corporate governance mechanism and capital structure of 42 Nigerian listed firms over a period of 2005-2016. The study adopted fixed effects least squares technique for estimation, the result revealed a positive and statistically significant relationship between board gender diversity and capital structure. However, there was insignificant relationship between corporate board size; board independence on
capital structure decision of the sampled firms. The study recommended that corporate shareholders and regulatory bodies should put in place robust policies that would improve the involvement of more women on the board.

3. Methodology and Data

3.1. Research Design and Data Collection

The study adopted secondary data and historical research design to determine the relationship that existed between corporate governance and value relevance of Nigerian listed consumer goods firms. The research design was adopted to derive a better knowledge of the present through the assessment of the past events and accurately predict the future. The population of the study consisted of 21 Nigerian listed consumer goods firms as at 2018 out of which 10 firms with complete dataset were selected over a period of 10 years (from 2009 to 2018). The purposive sampling technique was adopted to select the samples based on availability of relevant data and profitability performance for the period covered by the study.

3.2 Data and Model Specification

The panel data analysis for the multiple regression models that explained the $A$-Priori relationship between corporate governance and value relevance of accounting information of selected Nigerian listed consumer goods firms is specified in equation 3.1 and 3.2:

$$MVS = f(BCOMP, BDD, AUDIND, BSIZE, FSIZE)$$

Where:
- MVS = Market Value of Share
- BCOMP = Board Composition
- BDD = Board Due Diligence
- AUDIND = Audit Committee Independence
- BSIZE = Board Size
- FSIZE = Firm Size
- $\beta_0$ = Constant or intercept
- $\beta_1-\beta_5$ = Coefficient of slope parameters
- $e_{it}$ = Error Term
- $\beta$ is the coefficient of explanatory variable
- i is the firm specific
- t is the time dimension of the variables (10 years)

Hence, adopting the economic model, the following equation model is formulated:
\[ MVS_{it} = \beta_0 + \beta_1 BCOMP_{it} + \beta_2 BDD_{it} + \beta_3 AUDIND_{it} + \beta_4 BSIZE_{it} + \beta_5FSIZE_{it} + e_{it} \]

3.3. Estimation Technique

The study adopted Levin, Lin and Chu Technique of estimation to test the stationary level of the series. The study adopted ordinary least square regression model, Hausman test was used to select the most suitable model between the fixed and random effect regression models. Multiple regression analysis was adopted to analyze the data with the aid of E-view software, Version 9.0. Hypotheses were tested with the use of regression technique, because the results produced by regression are robust and it is a commonly used estimator for unidentified parameters.

The study variables and their measurements are presented in table 1

<table>
<thead>
<tr>
<th>S/N</th>
<th>Variables</th>
<th>Variables type</th>
<th>Measurement</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Market Value of Share</td>
<td>Dependent (Y)</td>
<td>The price per share at the end of three months after the firm’s balance sheet date</td>
<td>Whelan (2007); Ou and Sepe (2002); Okun and Amake (2018)</td>
</tr>
<tr>
<td>2</td>
<td>Board Composition</td>
<td>Independent (x)</td>
<td>The proportion of independent outside directors to total number of directors on the board</td>
<td>Jamila, Bahamman, Sabo and Rabiu (2016); Shehu and Abubakar (2012); Hassan (2011)</td>
</tr>
<tr>
<td>3</td>
<td>Board Due Diligence</td>
<td>Independent (x)</td>
<td>Natural logarithm of total number of meetings held by the board of directors during a financial year.</td>
<td>Shehu and Abubakar (2012)</td>
</tr>
<tr>
<td>4</td>
<td>Audit Committee Independence</td>
<td>Independent (x)</td>
<td>The proportion of independent audit committee members to the total number of audit committee members.</td>
<td>Jamila, Bahamman, Sabo and Rabiu (2016); Shehu and Abubakar (2012)</td>
</tr>
<tr>
<td>5</td>
<td>Board size</td>
<td>Independence (x)</td>
<td>Natural logarithm of total number of directors on board</td>
<td>George and Karibo, (2014)</td>
</tr>
<tr>
<td>6</td>
<td>Firm Size</td>
<td>Control</td>
<td>The Natural log of the total asset of the firm.</td>
<td>(Alnaif, 2014)</td>
</tr>
</tbody>
</table>

3.4. Hypotheses formulation

The following hypotheses were stated to guide the study:

i. $H_{o1}$: There is no significant relationship between board composition and value relevance of financial statement of listed consumer goods firms in Nigeria

ii. $H_{o2}$: There is no significant influence of board due diligence on value relevance of financial statement of listed consumer goods firms in Nigeria

iii. $H_{o3}$: There is no significant relationship between audit committee independence and value relevance of financial statement of listed consumer goods firms in Nigeria

iv. $H_{o4}$: There is no significant relationship between board size and value relevance of financial statement of listed consumer goods firms in Nigeria

4. Control variable

$H_{o5}$: There is no significant relationship between firm size and value relevance of financial statement of listed consumer goods firms in Nigeria

4.1. Results

Table no. 2 presented the descriptive statistics results of the studied variables namely market value of share traded, board composition, board due diligence, audit committee independence, board size and firm size in studying the relationship between corporate governance and value relevance of financial statement of Nigerian listed consumer goods firms.

<table>
<thead>
<tr>
<th></th>
<th>MVS</th>
<th>BCOMP</th>
<th>BDD</th>
<th>AUDIND</th>
<th>BSIZE</th>
<th>FSIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>123.7386</td>
<td>0.478912</td>
<td>1.570272</td>
<td>0.497952</td>
<td>0.102778</td>
<td>0.108865</td>
</tr>
<tr>
<td>Median</td>
<td>22.25500</td>
<td>0.519231</td>
<td>1.609438</td>
<td>0.500000</td>
<td>0.097849</td>
<td>0.108855</td>
</tr>
<tr>
<td>Maximum</td>
<td>1580.000</td>
<td>0.818182</td>
<td>2.079442</td>
<td>0.600000</td>
<td>0.265165</td>
<td>0.122454</td>
</tr>
<tr>
<td>Minimum</td>
<td>1.050000</td>
<td>0.066667</td>
<td>0.693147</td>
<td>0.333333</td>
<td>-0.30378</td>
<td>0.098756</td>
</tr>
<tr>
<td>Std. Dev</td>
<td>275.8317</td>
<td>0.234798</td>
<td>0.224849</td>
<td>0.028469</td>
<td>0.092238</td>
<td>0.004177</td>
</tr>
<tr>
<td>Skewness</td>
<td>3.490728</td>
<td>-0.25719</td>
<td>-0.03544</td>
<td>-3.13699</td>
<td>-0.68453</td>
<td>-0.02175</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>15.42521</td>
<td>1.710386</td>
<td>4.310705</td>
<td>26.54198</td>
<td>5.351719</td>
<td>3.478124</td>
</tr>
<tr>
<td>Jarque-bera</td>
<td>846.3609</td>
<td>8.032058</td>
<td>7.179050</td>
<td>24.73282</td>
<td>30.85389</td>
<td>0.960395</td>
</tr>
<tr>
<td>Probability</td>
<td>0.000000</td>
<td>0.018024</td>
<td>0.027611</td>
<td>0.000000</td>
<td>0.000000</td>
<td>0.618661</td>
</tr>
<tr>
<td>Observation</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

*Source: Authors’ computation using E-view software, Version 9.0.*
Market value of share had a mean and standard deviation values of 123.7286 and 275.8317 respectively. These values depicted that on the average, share are publicly traded for 124 kobo. The result showed that data were highly dispersed from the mean, exhibiting the heterogeneous nature of data. The minimum and maximum values were 1.050000 and 1580.000 respectively. The board composition had a mean and standard deviation values of 0.478912 and 0.234798 respectively. The standard deviation is lower than the mean value indicating that board composition clusters round the average. The minimum and maximum values were 0.066667 and 0.818182 respectively. The board due diligence (BDD) had a mean of 1.570272 and standard deviation of 0.224849 which was statistically lower compared with the mean, indicating that board due diligence exhibited considerably clustering around the average. The minimum and maximum observation was 0.693147 and 2.079442 respectively. Audit committee independence (AUDIND) had a mean and standard deviation value of 0.497952 and 0.028469 respectively. This showed that series were highly clustered to the mean, which indicated the homogeneity of the series. The minimum and maximum observation was 0.333333 and 0.600000 respectively.

Finally, all the series except MVS were negatively skewed while the kurtosis values for all the series except board composition were above 3 indicating that the distribution were leptokurtic and had more extreme positive values. The results of Jarque-Bera normality test for all the series with the exception of firm size were not stationary as their statistical values were significant at 5% level of significant.

### 4.2. Correlation Result

Correlation analysis focused on the type of relationship between variables, strength of relationship among variables. In this section, a summary of the Pearson product moment correlation between the variables examined were presented in the table 3 and then further explained.

#### Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>MVS</th>
<th>BCOMP</th>
<th>BDD</th>
<th>AUDIND</th>
<th>FPRT</th>
<th>FSIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVS</td>
<td>1.000000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BCOMP</td>
<td>-0.158074</td>
<td>1.000000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDD</td>
<td>-0.261740</td>
<td>0.100939</td>
<td>1.000000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AUDIND</td>
<td>-0.178207</td>
<td>0.128114</td>
<td>0.059445</td>
<td>1.000000</td>
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</tr>
<tr>
<td>BSIZE</td>
<td>0.376226</td>
<td>0.039883</td>
<td>0.023682</td>
<td>-0.081701</td>
<td>1.000000</td>
<td></td>
</tr>
<tr>
<td>FSIZE</td>
<td>0.198552</td>
<td>-0.431741</td>
<td>-0.068717</td>
<td>0.075226</td>
<td>-0.232876</td>
<td>1.000000</td>
</tr>
</tbody>
</table>


407
The values of the correlation co-efficient range from -1 to 1 and the sign of correlation co-efficient indicates the direction of the relationship (positive or negative), the absolute values of the correlation co-efficient indicated the strength, with larger values indicating stronger relationships. The correlation coefficients on the main diagonal are 1.0 because each variable has a perfect positive linear relationship with itself. The correlation coefficient of all of the independent variables (board composition, board due diligence, audit committee independence, board size and control variables (Firm’s profitability and firm size) have weak relationship with the dependent variables (Market Value of Shares), which implied that their values were not close to 1. Also, board composition, board due diligence, and audit committee independence are negatively related to the market value of shares.

4.3. Unit Root Test

The unit root test was computed to determine the stationarity of the series. This ascertained whether series were stationary at level I(0) or at first difference I(1). This study adopted Levin, Lin, Chu test (LLC) which accounted for common root. Table 4 presented the result of the unit root test and the null hypothesis of the test is stated below:

LLC, $H_0$; Unit root with common process

Table 4

<table>
<thead>
<tr>
<th>Variables</th>
<th>Levin, Lin, Chu Unit Root Test</th>
<th>Level</th>
<th>First Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MODEL A</td>
<td>MODEL B</td>
<td>MODEL C</td>
</tr>
<tr>
<td>MVS</td>
<td>-3.45014***</td>
<td>-7.91363***</td>
<td>-2.91879***</td>
</tr>
<tr>
<td>BCOMP</td>
<td>-0.09826</td>
<td>0.26811</td>
<td>-3.4969***</td>
</tr>
<tr>
<td>BDD</td>
<td>-5.79702***</td>
<td>-4.34402***</td>
<td>-0.05626</td>
</tr>
<tr>
<td>AUDIND</td>
<td>-4.76620***</td>
<td>-4.76416***</td>
<td>0.01855</td>
</tr>
<tr>
<td>BSIZE</td>
<td>-4.63358***</td>
<td>-6.96256***</td>
<td>-4.25416***</td>
</tr>
<tr>
<td>FSIZE</td>
<td>-4.11714***</td>
<td>-0.03548</td>
<td>6.91473</td>
</tr>
</tbody>
</table>

where Model A depicts intercept, Model B depicts Intercept and trend and Model C depicts None. ***, ** and * shows the rejection of null hypothesis at 1%, 5% and 10% respectively.

Source: Author’s Computation (2019,) using E-view software, Version 9.0.
Using the null hypothesis of the test, stationarity of the series was ascertained by comparing the probability values with the three conventional levels of significance in econometrics which are 10%, 5% and 1%. The summary of the order at which each of the series is significant is shown at the extreme left of the table I(d). The results of the Levin, Lin, Chu test showed that all the series were stationary at level I(0). Hence, this study adopted the panel least square regression since the criterion for the adoption is that the series must be stationary at level. The lag length was selected using the Schwarz Information Criteria (SIC).

4.4. Regression Results

Table 5 offered the main regression results. The study estimated two linear regression namely the fixed effect regression, and random effect regression. Thus we made the necessary comparison based on the Hausman test. The statistical significance of the Hausman test validated random effect models as shown in line with the submissions of Hausman (1978), Gujarati and Porter (2009), and Wooldridge (2012).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Fixed effect model</th>
<th></th>
<th>Random effect model</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>t-Statistic</td>
<td>Prob.</td>
<td>Coefficient</td>
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<tr>
<td>BCOMP</td>
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<tr>
<td>AUDIND</td>
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<td>0.0414</td>
<td>19286.22</td>
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<tr>
<td>BSIZE</td>
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<td>1341.024</td>
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<tr>
<td>FSIZE</td>
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<td>-1.550685</td>
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<td>-1288.154</td>
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<tr>
<td>C</td>
<td>-921.0197</td>
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<td>0.3261</td>
<td>-1135.573</td>
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<tr>
<td>R-Squared</td>
<td>0.693635</td>
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<td>0.718316</td>
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<tr>
<td>Adj. R-</td>
<td>0.653561</td>
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<td>0.674336</td>
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<tr>
<td>square</td>
<td></td>
<td></td>
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<tr>
<td>F-Stats</td>
<td>3.635362</td>
<td>(0.000074)</td>
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<td>7.237805</td>
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<tr>
<td>Durbin-</td>
<td>2.338901</td>
<td></td>
<td></td>
<td>2.379402</td>
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<tr>
<td>Watson</td>
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<tr>
<td>Hausman Test</td>
<td>Test Summary</td>
<td>Chi-Sq. Statistic</td>
<td>Chi-Sq. d.f.</td>
<td>Prob.</td>
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<td>Period random</td>
<td>9.433785</td>
<td></td>
<td>6</td>
<td>0.1506</td>
</tr>
</tbody>
</table>
Board composition showed a positive and statistically insignificant relationship with the market value of share of Nigerian listed consumer goods firms. This showed that board composition had no significant influence on market value of share. The implication of this is that an increase in board composition will yield one unit increase in market value of share but not significant. Board due diligence showed a negative and significant relationship with the market value of share. This implied that an increase in board meetings has a significant effect on market value of share. However, an increase in board due diligence led to a decrease in market value of share by one unit. Audit committee independence showed a positive and significant relationship with the market value of share. Therefore an increase in the independence of audit committee members has a significant influence on market value of share. This showed that an increase in the audit committee independence will yield one unit increase in the market value of share. Board size had a positive and significant association with the market value of share. Therefore an increase in the board size brought about a significant increase, at an acceptance level of 5%, in the market value of share. Finally, firm size showed a positive and significant relationship with the market value of share. Therefore an increase in the firm size will significantly affect the market value of share.

Furthermore, table 5 showed the coefficient of variation of 71% which is the explanatory ability of the model for the systematic variations in the dependent variable. The Adjusted R-squared value revealed the coefficient of determination of approximately 67% which implied the total variation in market value of shares explained by the explanatory variables in the model while the remaining 33% is explained by variables not included in the model. The Durbin Watson has value of 2.379402. This indicated that the model is free from autocorrelation because the value of Durbin-Watson is within the acceptable region and this confirmed the statistical reliability of the model. The f-stat is significant at 5% indicating that the model specification was fit to predict the market value of share.

5. Discussion of findings

The study examined the relationship between corporate governance and value relevance of financial statement of Nigerian listed consumer goods firms. From the result of our analysis, the Board composition revealed a positive and insignificantly relationship with market value of share. This result is consistent with (Kajola, Olabisi and Fapetu 2019); (Shehu & Abubakar, 2012), who discovered insignificant association between board composition and the market value of shares and in contrast with Ahmad and Sallau (2018) whose result showed that board composition had a positive and significant impact on market value.
Furthermore, board due diligence had a negative and significant relationship with market value of share. This implied that an increase in board due diligence leads to a decrease in market value of share by one unit. The result of the study is in agreement with finding of Kajola, Olabisi, and Fapetu (2019) who submitted that regular meetings strengthens cohesive bonds among directors and enables them to thoroughly consider issues that are germane to the survival and growth of the business and take decisions on them. However, Olabisi and Omoyle (1992), held a view that board meeting is costlier and disadvantageous in terms of travelling expenses, refreshments.

The result further showed a positive and significant relationship between audit committee independence and market value of shares. This indicates that an increase in the independence member of the audit committee yields a significant increase in the market value of shares. This study is in line with Shehu and Abubakar (2012). Thus, a firm with higher independent audit committee member has greater potential to influence market than one with lower independent audit committee.

The result revealed a positive and significant relationship between board size and market value of share among consumer goods firms in Nigeria. Various studies such as Mungly, Babajee, Maraye and Seetah (2016); Fama and Jensen (1983); Brown and Caylor (2004) supported the findings. For example, Mungly, Babajee, Maraye and Seetah (2016) argued that a small board size improves the quality of financial reporting as directors can communicate better and increase the information content and this reduces the chance of earnings management. Sing and Harianto, (2014) posited that large board provides greater monitoring and advice. Fama and Jensen (1983) submitted that large boards improve board performance by reducing CEO dominance.

The results showed a relationship between firm size and market value of shares. This finding is in line with the findings of previous studies such as Ogeh and Fiador (2013). The findings of this study indicated that bigger firms in terms of assets have better value relevance of accounting information than smaller ones.

Conclusive the overall results conformed to previous studies such as Kajola, Olabisi and Fapetu (2019); balagobei (2018); Ibrahim and Salihu (2015); Habib and Azim (2013) who submitted that effective implementation of corporate governance enhance value relevance of firms.

5.1. Conclusion and Implication of the Study

The study confirmed clearly that the identified variables explained the market value of shares. In essence, increase in audit committee independence translates to a
higher market valuation. However, board composition does not have a significant relationship with market value of share which implies that it is not relevant when deciding corporate governance and value relevance of accounting information. It is worth of note that board composition and board due diligence have a positive relationship with market value of shares. Therefore policies aimed at enhancing board due diligence, audit committee independence and board size should be formulated and implemented among consumer goods firms in Nigeria.

The study recommended that Nigerian company’s law should enforce Nigerian listed consumer goods firms to place a high premium on corporate governance structure that are value relevant so as to improve shareholders wealth and other stakeholders. The relevance of this study includes the benefit to consumer goods firms in Nigeria to improve the uniformity of firm practices and operations as regard policy formulation and implementation. The researchers would also gain better understanding of the value attached to the corporate governance in terms of value relevance of accounting information.

Reference


RELEVANCE OF ENTREPRENEURIAL ORIENTATION STRATEGY TO COOPERATIVE BUSINESS ORGANIZATIONS IN NIGERIA

Nurudeen Afolabi SOFOLUWE¹

¹ Department of Cooperative and Rural Development, Olabisi Onabanjo University, Ago-Iwoye, Ogun State, Nigeria. E-mail: nasofolufe@gmail.com

JEL: J54, L25

Abstract

This study examines the relevance of entrepreneurial orientation (EO) strategies to the success of cooperative business organizations. Primary data were collected through structured questionnaire from randomly sampled cooperative organizations. The data covered organizational characteristics, entrepreneurial orientation and performance of the cooperative firms. Descriptive analysis and structural equation model (SEM) were used to analyze the data. The findings show that entrepreneurial capacity of cooperative organizations to unlock prevailing market strategies is high. However, their level of aggressiveness for enhanced market competitiveness is low. Strong proclivity for high risk business is also low. The competitive aggressiveness of cooperative organization is found to be non-existent in the entrepreneurial framework. The findings suggest the need for review of business strategies of most cooperative entities.

Key words: Cooperatives, entrepreneurial orientation, market competition, SEM.

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1. Introduction

Increasing changes in business environments and unpredictable reactions of individuals and customers alike make the task of survival of cooperative organizations more difficult. The pressure of globalization and market competition
also suggest the need for various organizations to seek new ways of adapting to emerging business circumstances. One of the possible ways of surviving competition is to strategically utilize internal resources. As part of the strategic process, entrepreneurial orientation has been suggested as a viable and strategic means of achieving competitive success in organizations (Divito & Bohnsack, 2017; Homaid, Minai & Al-Ansi, 2018). Yet, it is not clear whether cooperative organizations could be advised to take advantage of this strategic option, most especially in developing economies. This is largely due to lack of information on the relevance of entrepreneurial orientation to successful outcome of cooperative organizations. Available evidence indicates that cooperative business organizations are built on effective business structure similar to other form of businesses (Adrian & Green, 2001; Nunez & Moyano, 2004; Agirre, Reinares & Agirre, 2014; Affendy, Abdul-Talib, & Farid, 2015). But, in comparison to other forms of businesses, there is need for cooperative firms to create entrepreneurial orientation to achieve sustainable competitive advantage. Globally, the cooperative sector represents a significant contribution to the global economy. According to ICA (2018), the top 300 cooperatives around the world had a total turnover of over two trillion US dollars ($2trillion). This is only close to the economy of the World’s 8th and 9th largest economy, Italy and Brazil respectively. In each of these countries, cooperatives’ development is largely championed by states and provinces. In Africa, almost 250,000 Kenyans are directly employed by cooperatives while over 63% of their population derived their livelihood from cooperative action.

Cooperative organizations as they exist in Nigeria show that cooperatives are associations of members with specific interest in promotion of member-patrons through provision of best possible services at minimum price (cost) (Ogunmuyiwa & Sofoluwe, 2019). Although surpluses in the cooperative system are distributed in proportion to transactions of members, shares in the system are held exclusively by members and are not transferable unlike investors owned firms (Sofoluwe, 2019).

Traditionally, cooperatives are set up to assist member-patrons raise profits accruable from businesses. Consequently, cooperatives hold the outlook of an enterprise that exists based on ‘user-owned’ and ‘user controlled’ structure. By implication, both business and non-business activities of cooperatives are jointly owned and managed by all the members through democratic process. Furthermore, benefits from transactions of cooperatives are also distributed equitably among the members based on the patronage (Ogunmuyiwa & Sofoluwe, 2019). The goal of the study is to empirically examine the relevance of entrepreneurial orientation to the success of cooperative business entities. Due to prevailing economic circumstances in
Nigeria, and the stringent conditions associated with access to credits, most individuals at medium to lower class of Nigerian society depend on supports from cooperative organizations. Hence, the business success of cooperative groups has both direct and indirect consequence on survival of most people. Given that there is limited literature examining entrepreneurial orientation and performance of cooperative business organizations, we seek to add to frontier of knowledge on empirical link between entrepreneurial orientation (EO) and performance of cooperative organizations. While a number of studies exist on EO of other forms of businesses, little has been found to on the role of EO in driving cooperative businesses.

The rest of the paper is organized in sections. The next section presents relevant literature on EO, cooperative business organizations and the empirical evidence between EO and various forms of businesses. The third section covers the methodology of the study while the following section discusses the results. The last section concludes the paper.

2. Literature review

Studies examining the relationship of EO to cooperative business firms are scarce. However, most existing studies on entrepreneurial activities of firms have relied on the theory of entrepreneurship. In a competitive process, EO could be a key determinant of the ability of a firm to survive competition. It may also be an important factor in gaining new opportunities and differentiate a business organization from others. Consequently, EO has attracted different forms of definition. Early scholars including Dunkelberg and Cooper, (1982) described it as attributes and values that bring up motivation to succeed through entrepreneurial actions. Dess and Lumpkin (2001) associate EO with a path leading to a new entrance, while Wiklund and Shepherd (2003) believed it is simply a strategy of a firm involving certain processes and practices with a view to surviving competition. It is a tool to align organizational vision with market realities. It is a business organization attempt to be creative through introduction of new products or services (Anderson et al., 2015). Based on these definitions, business organizations with EO could gain huge capabilities to make discoveries and take risk with new market opportunities (Lee, Lee & Pennings, 2001).

A number of studies have viewed EO from business perspective. Alarifi, Robson and Kromidha (2019) considered it crucial to breaking market complexities, gaining new business ground and establishing product needs of numerous people. Divito and Bohnsack (2017) investigated the interaction effect between entrepreneurial
orientation and sustainability decision. Exploratory and mixed methods were applied to different dimensions of EO. The findings show that EO could affect sustainability decision making in different forms. The importance of this study lies in its theoretical application. The application to business firms remains unexplored. The earlier study conducted by Anderson et al. (2015) attempted to redefine EO constructs focusing on nomological error in the EO literature. The study suggested a need for decomposition into behavioural and attitudinal components of EO. Alarifi et al. (2019) examined the relevance of EO to social enterprises. The findings indicate that performance of social firms is significantly linked to innovation and proactiveness. However, the study did not find significant support for risk taking as a component of EO in the development of social enterprises.

Lumpkin and Dess (2001) contended that EO is grossly associated with the ability of an organization to take risks, be proactive in taking innovative decisions and achieve success among competitors. Consequently, studies (e.g. Lurtz & Kreutzer, 2016; Beekman, Steiner & Wasserman, 2012; Wilkund & Shepherd, 2005; Li et al., 2009) showed that EO is an organizational survival strategy that is capable of raising performance level of business organizations. In order to benefit from advantages inherent in EO, it is important for business organizations to understand and apply its various dimensions.

These dimensions include ‘risk taking’, ‘proactiveness’, ‘innovation’, ‘advancement’, ‘competitive aggressiveness’, and ‘autonomy’ (Lurtz & Kreutzer, 2016; Lumpkin & Dess, 2001). These dimensions are not without criticism. Homaid et al. (2018) agreed with only three of the dimensions - risk, innovation and proactiveness but Ireland et al. (2003) argued that the additional dimensions of EO can bring about market growth rate. Nonetheless, it is almost a consensus that part - if not all of the dimension constructs are crucial to success. This suggests that for a business organization to outperform its competitors, some of the key dimensions of EO, if not all, need to be put in perspective.

In the study conducted by Homaid et al. (2018), strategic orientation variables such as market orientation, entrepreneurial orientation and learning orientation were examined in relation to the performance of microfinance institutions. The findings of the study showed that EO has a significant effect on the performance of microfinance firms. Since microfinance institutions are finance based, the application of the findings to other non-strict financial firms may be limited.

The performance of organizations is generally addressed from two perspectives: financial and non-financial measures (Alarape, 2013). Financial measures of performance include firm revenue, return on investment (ROI), return on assets
(ROA) and return on equity (ROE). But the use of financial variables to capture performance is better carried out using time series data to reflect the trend and variations in financial variables over time. Consequently, performance using financial variables is criticized on the basis of that limitation. Non-financial measure of performance usually covers customer satisfaction, market share, loyalty, sales growth, patronage. The limitation of this type of measure is that it is usually very subjective to the perception of the respondents. Yet, in situation where data over a large period of time are not available, non-financial performance is usually better to capture organizational outcome at a point in time.

3. Methodology

The study adopts a questionnaire survey. All items of the questionnaire are captured in Likert-form (five-point) responses that ranged from ‘1 to 5’. The response are measured as “strongly agree” = 5, ‘agree’ = 4, ‘neutral’ = 3, ‘disagree’ =2 and ‘strongly disagree’ = 1. The study population covers cooperative business enterprises registered under the existing law of the Nigerian cooperative societies Act. 850 questionnaires were distributed to randomly sampled respondents out of which 636 (74.8%) were found useful. Data collected included characteristics of the organization, measures of entrepreneurial orientation and performance. Reliability measures were set at a minimum recommended standard of 0.60 (Nunnaly, 1978). Measures of EO were adapted from previous studies (Li et al., 2009; Lumpkin & Dess, 2001; Alarape, 2014). The EO measures cover several constructs under five dimensions of innovativeness, risk taking, proactiveness, competitive aggressiveness, and autonomy. In order to account for variation in sizes of the cooperative organizations, ‘annual growth rate in asset’ of the organizations is computed as a measure of performance (Alarape, 2013). The approach accounts for the bias created by cooperative organizations of dissimilar sizes. The mathematical expression of the performance measure is given as follows:

\[ Z_{t1} = Z_{t0} (1 + h)^{t1-t0} \]  
\[ Z_{t0} (1 + h)^{t1-t0} = Z_{t1} \]  
\[ (1 + h)^{t1-t0} = Z_{t1}/Z_{t0} \]  
\[ 1 + h = (Z_{t1}/Z_{t0})^{1/t1-t0} \]  
\[ h = (Z_{t1}/Z_{t0})^{1/t1-t0} - 1 \]
h = growth rate of the cooperative organization (annual growth rate), $Z_{t1} = \text{cooperative assets at inception while } Z_{t0}$ represents the value of assets at present. Structural equation model (SEM) in addition to descriptive statistics was used. Both SPSS and AMOS v. 23 were utilized to carry out the analysis. Measurement of items and reliabilities are presented in Tables 1 and 2. The Cronbach’s Alpha test shows that most of the items of all the constructs are above 0.70, suggesting that the items are at high level of internal consistency. The composite reliability is also high indicating the appropriateness of the constructs and the items to measure entrepreneurial orientation of cooperative business organizations.

**Table 1**

<table>
<thead>
<tr>
<th>EO Dimensions Indicators</th>
<th>Item measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovativeness</td>
<td></td>
</tr>
<tr>
<td>(inn1)</td>
<td>Cooperatives favours innovativeness of product.</td>
</tr>
<tr>
<td>(inn2)</td>
<td>New lines of product and service in the last 3 years</td>
</tr>
<tr>
<td>(inn3)</td>
<td>Emphasis on cooperative principles and values</td>
</tr>
<tr>
<td>(inn4)</td>
<td>Changes in new product ideas</td>
</tr>
<tr>
<td>(inn5)</td>
<td>Investment in R&amp;D in harsh economic conditions.</td>
</tr>
<tr>
<td>(inn6)</td>
<td>A unique approach to business</td>
</tr>
<tr>
<td>Proactiveness</td>
<td></td>
</tr>
<tr>
<td>(pro1)</td>
<td>Business actions in market</td>
</tr>
<tr>
<td>(pro2)</td>
<td>Strong tendency to drive cooperative ahead of competitors</td>
</tr>
<tr>
<td>(pro3)</td>
<td>Unlocking the prevailing competitors’ strategies</td>
</tr>
<tr>
<td>(pro4)</td>
<td>Increasing level of market aggressiveness</td>
</tr>
<tr>
<td>(pro5)</td>
<td>Continuous scanning of business environment</td>
</tr>
<tr>
<td>(pro6)</td>
<td>Market opportunities are frequently researched</td>
</tr>
<tr>
<td>Risk-taking</td>
<td></td>
</tr>
<tr>
<td>(risk1)</td>
<td>Strong proclivity for high risk business</td>
</tr>
<tr>
<td>(risk2)</td>
<td>Intuitive actions in prevailing business environment</td>
</tr>
<tr>
<td>(risk3)</td>
<td>Bold decision with respect to services</td>
</tr>
<tr>
<td>(risk4)</td>
<td>Aggressiveness in decision taking</td>
</tr>
<tr>
<td>(risk5)</td>
<td>The culture of risk taking</td>
</tr>
<tr>
<td>Autonomy</td>
<td></td>
</tr>
<tr>
<td>(aut1)</td>
<td>Independent actions to bring out an idea</td>
</tr>
<tr>
<td>(aut2)</td>
<td>Cooperative pursues self-directed opportunities</td>
</tr>
<tr>
<td>(aut3)</td>
<td>Independence of actions among Coop members</td>
</tr>
<tr>
<td>Aggressiveness</td>
<td></td>
</tr>
<tr>
<td>(ca1)</td>
<td>Organization is reactionary to business trends</td>
</tr>
<tr>
<td>(ca2)</td>
<td>Market changes attract aggressive behaviour</td>
</tr>
</tbody>
</table>

*All items were measured on Likert scale (5-point).*
Table 2

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Mean</th>
<th>SD</th>
<th>Cronbach’s Alpha</th>
<th>Composite reliability</th>
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<tr>
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<td>4.09</td>
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<td>3.00</td>
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<td>2.61</td>
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<td>(inn4)</td>
<td>2.22</td>
<td>1.114</td>
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<td></td>
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<tr>
<td>(inn5)</td>
<td>4.13</td>
<td>0.909</td>
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<tr>
<td>(inn6)</td>
<td>4.20</td>
<td>0.859</td>
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<td>Proactiveness</td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>4.37</td>
<td>0.878</td>
<td>0.735</td>
<td>0.75</td>
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<td>(pro2)</td>
<td>4.02</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(pro3)</td>
<td>4.30</td>
<td>0.785</td>
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<td></td>
</tr>
<tr>
<td>(pro4)</td>
<td>3.11</td>
<td>1.233</td>
<td></td>
<td></td>
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<tr>
<td>(pro5)</td>
<td>4.07</td>
<td>0.998</td>
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<td>(pro6)</td>
<td>4.20</td>
<td>0.749</td>
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<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>(risk1)</td>
<td>1.24</td>
<td>0.431</td>
<td>0.747</td>
<td>0.72</td>
</tr>
<tr>
<td>(risk2)</td>
<td>1.67</td>
<td>0.818</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(risk3)</td>
<td>1.74</td>
<td>0.953</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(risk4)</td>
<td>1.72</td>
<td>0.886</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(risk5)</td>
<td>2.28</td>
<td>1.089</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Autonomy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(aut1)</td>
<td>1.78</td>
<td>0.964</td>
<td>0.749</td>
<td>0.76</td>
</tr>
<tr>
<td>(aut2)</td>
<td>1.85</td>
<td>0.918</td>
<td></td>
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<tr>
<td>(aut3)</td>
<td>1.98</td>
<td>0.856</td>
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<td></td>
</tr>
<tr>
<td>Aggressiveness</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>(ca1)</td>
<td>1.78</td>
<td>0.814</td>
<td>0.769</td>
<td>0.77</td>
</tr>
<tr>
<td>(ca2)</td>
<td>2.39</td>
<td>1.422</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Results and Discussion

4.1. Characteristics of respondents

Characteristics of the sampled cooperative organizations are presented in Table 3. Less than 40% (39.15%) of the sample cooperatives engaged in produce marketing. Less than 30% of the sample focused on thrift, credit and investment activities while 16% are multi-purpose group engaging in diverse forms of activities. The rest of the sample is consumer cooperatives. The age of the cooperative group also differs. Most (60%) of the organizations have years of establishment ranging between 5 and 10; 26% are above 10 years of existence while approximately 13% are less than 5 years.
In terms of available capital for business activities, the majority (65.1%) of the cooperative groups have capital accumulation value above N 5,000,000 ($13,698.63). The percentage of cooperative groups with less than $1,369.863 capital value is below 5% (3.93%). However, 22.8% have capital accumulation value that ranges between $2,739.726 and $13,698.63.

Table 3

<table>
<thead>
<tr>
<th>Characteristics of cooperative firms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Firm characteristics</strong></td>
</tr>
<tr>
<td>Types</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Capital (₦ ‘000)</td>
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</tr>
</tbody>
</table>

*Source: Field Survey, 2019.*

4.2. Entrepreneurial orientation strategies and performance of cooperatives

The diagnostics of the SEM as indicated by indices of goodness-of-fit indicate appropriateness of the specification (Table 4). The Chi-square/degree of freedom ratio of the model is 2.19 and this value falls within the expected range of 1 and 5. A lower value of the ratio usually suggests a good fit of the specification. The values of the remaining indices of the model are higher than the commonly used threshold level of 0.90, suggesting the fit of the model specification. Also, the estimated value of root mean square error of approximation (RMSEA) is 0.063 which is lower than the maximum value of 0.08.
Table 4

<table>
<thead>
<tr>
<th>Goodness of fit indices</th>
<th>Construct</th>
<th>Reference Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\chi^2/\text{degree of freedom}$</td>
<td>2.190</td>
<td>$1 &lt; \chi^2/\text{df} &lt; 5$</td>
</tr>
<tr>
<td>CFI(Comparative Fit Index)</td>
<td>0.971</td>
<td>$0.95 &lt; \text{CFI} &lt; 1$</td>
</tr>
<tr>
<td>NFI (Normed Fit Index)</td>
<td>0.923</td>
<td>$0.90 &lt; \text{NFI} &lt; 1$</td>
</tr>
<tr>
<td>RFI (Relative Fit Index)</td>
<td>0.919</td>
<td>$0.90 &lt; \text{RFI} &lt; 1$</td>
</tr>
<tr>
<td>IFI (Incremental Fit Index)</td>
<td>0.967</td>
<td>$0.95 &lt; \text{IFI} &lt; 1$</td>
</tr>
<tr>
<td>TLI(Tucker-Lewis Fit Index)</td>
<td>0.933</td>
<td>$0.95 &lt; \text{TLI} &lt; 1$</td>
</tr>
<tr>
<td>RMSEAv (Root Mean Square Error)</td>
<td>0.063</td>
<td>RMSEA &lt; 0.08</td>
</tr>
</tbody>
</table>

Source: Data Analysis, 2019.

The path analysis of the SEM from the structural equation is graphically represented in Figure 1. The squared multiple correlation (SMC) values of each ‘innovative’ constructs indicate that ‘inn1’ is 0.22 implying that 22% of the variance in cooperative innovativeness is represented by their drive for development and leadership (inn1). Innovativeness in the aspect of creating ‘a new line of product and service over the last 3 years’ (inn2) has SMC value of 0.535 indicating that 53.5% of variance in innovativeness of cooperatives could be associated with ‘inn2’. The innovative drive of cooperative organizations appears to be largely based on cooperative principles and values (inn3). The SMC value is higher at 0.665 indicating that about 67% of entrepreneurial idea that centres on innovation is largely derived from principles and values of cooperatives. The SMC value for ‘inn4’ is 0.338 suggesting that innovative ‘changes are incorporated in new product ideas’ by cooperative at 33.8% level. SMC values for ‘inn5’ and ‘inn6’ are below 1% (0.004 and 0.001), an indication that cooperative organizations do not ‘favour research investment in development during harsh economic conditions’ (inn5) and that cooperatives do not ‘adopt a unique approach to business production’ (inn6). Intuitively, out of the six factors measuring variances in innovativeness, only four are applicable to cooperative business organizations. These are emphasis on research and development, establishment of new lines of product and service, application of principles and values of cooperative organization, and changes to the cooperative ideas.

The entrepreneurial proactiveness of organizations is defined by a number of factors. The squared multiple correlation values of the factors show different level of variances. The value of ‘pro1’ is 0.629 indicating that about 63% of the variance in proactiveness of cooperative organization is associated with its capacity to initiate
business actions in the prevailing market (pro1). The factor of ‘pro2’ shows squared multiple correlation value of 0.314, and indication that the tendency to drive cooperative organizations ahead of investors owned business is just 31.4% of the variances in entrepreneurial proactiveness of the organizations. The entrepreneurial capacity of cooperative organizations to unlock prevailing market strategies (Pro3) is high at 0.670 representing 67% of the variances in entrepreneurial proactiveness. However, the level of aggressiveness of cooperative organization for enhanced market competitiveness is low at 0.015 (1.5%). This is an indication that entrepreneurial proactiveness of cooperative organization is not largely defined by its aggressiveness (pro4). A similar result is obtained for orientation of cooperatives toward frequent research for market opportunities (pro6). The estimated squared multiple correlation is 0.181(18.1%) of the variance in proactiveness of cooperative organizations. The tendency to scan business environment as part of entrepreneurial proactiveness is 0.404. The result implies that about 40% of proactiveness of cooperative organization is linked to market scanning.

Strong proclivity for high risk business is very low since the result shows that less than 1% (0.5%) of the risk taking component in a cooperative organization is attributed to the factor of proclivity (risk1). The finding supports the proposition that the prevailing business environment brings about intuitive actions by cooperative organizations (risk2). Squared multiple correlation value of 0.620 is obtained indicating that over 60% of the variances in entrepreneurial risk of cooperative is linked to the environment and intuitive action of business groups. In terms of service provision, the findings suggest that risk taking attributes of cooperative organization is largely (79.7%) linked to the organizational bold decision on service provision (risk3). The factor of aggressiveness in decision taking is relatively low (37.2%) suggesting that much could not be attributed to the factors in the discussion on risk taking attributes of cooperative organizations. The question on existence of risk taking culture by cooperative could not be given full affirmative response since only 42.5% of the variance in risk taking is linked to the factors.

The analysis on autonomy variable show that autonomy of cooperative organization is largely represented by self-directed ability and wills of the organization (91.5%) followed by independent action of members at 50.6% level and independence of actions among cooperative members (46.9%). An interesting results from the analysis is that the two constructs of competitive aggressiveness in a cooperative organization are both negative (-0.009 (ca2) and -0.208 (ca1)) suggesting near absence of competitive aggressiveness in entrepreneurial framework of cooperative organizations.
With respect to the effect of entrepreneurial orientation, ‘proactiveness’ shows the largest effect on performance of cooperatives (0.49). This is followed by autonomy (0.45) and innovativeness (0.42) respectively. The effect of risk-taking dimension of EO on performance of cooperative is very low (0.02). Interestingly, there seems to be absence of competitive aggressiveness among cooperative groups. The estimation did not return regression weight value for the variable while the squared multiple correlation values for the two constructs of competitive aggressiveness (CA) were also negative. In order to affirm this result, a hypothesis was tested for the CA variable and was set up as follow:

\( H_{01} \): Competitive aggressiveness is non-existent in cooperative organizations

The result of the hypothesis using F-test of variance in a multi-regression process suggests that the null hypothesis \( (H_{01}) \) cannot be rejected. Hence, the result (F = 0.733, p > 0.05) affirmed that competitive aggressiveness is non-existent in
cooperative business organizations. The result of the hypothesis testing is presented in Table 5.

Table 5

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Regression</td>
<td>1.445</td>
<td>.723</td>
<td>.733</td>
<td>.486</td>
</tr>
<tr>
<td>Residual</td>
<td>42.381</td>
<td>.986</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>43.826</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Data Analysis, 2019.

5. Conclusions

The findings of the study indicate that EO elements such as proactiveness, autonomy and innovativeness are relatively related to the performance outcome of cooperative business organizations. This is consistent with Wiklund and Shephered (2005). If the strategic success of cooperative business entities rests on its proactiveness, autonomy and innovativeness, it would be more appropriate to direct policy actions towards improving entrepreneurial orientation of these firms toward these lines.

From the perspective of entrepreneurial orientation, the finding of this research suggests that risk-taking and competitive aggressiveness are not clearly related to the performance drive of cooperative organizations. This agrees with the findings of Affendy et al. (2015). The implication of the findings is that cooperative business organizations do not have strong proclivity for high risk business. Also, the findings of the study suggest that cooperative firms exhibit low response to prevailing business challenges. Furthermore, the cooperative business organization is found to be less aggressive in decision making and the culture of risk is almost non-existent. The factors associated with competitive aggressiveness including swift reaction to market trends and changes are not part of entrepreneurial orientation of cooperative business organizations. Intuitively, cooperative organizations as it is in developing nations like Nigeria could not be relied upon to stimulate strong market reactions during economic crisis. Thus, the findings of the study lead to a conclusion that competitive aggressiveness is nearly absent as an entrepreneurial strategy of cooperative organizations.

The results of this study have significant implications for stakeholders of cooperative organizations and for other forms of business in general. There are greater indicators for these firms to nurture risk-taking ability and develop
competitive aggressiveness. Global economic outlook is dynamic suggesting needs for adjustment to changes by all business firms. While adherence to cooperative principles and values as part of its autonomy supports greater performance, increase in entrepreneurial skills in a strategic way is needed to sustain greater level of performance. This study therefore confirms that only part of entrepreneurial orientation strategies is relevant to driving organizational performance of cooperative entities in a competitive environment.

At present, there is no supporting evidence to conclude that all the five dimensions of entrepreneurial orientation (innovativeness, proactiveness, risk-taking, autonomy and competitive aggressiveness) as espoused in some literature cannot be generalized for all business organizations. This conclusion finds support in some existing studies.

This study has its limitations. First, it covers only cooperative business organizations implying possibilities of variation for other forms of business. Second, it is carried out in developing nation with institutional limitations. Also, the data is cross-section which is largely subjective. Subjective measure of performance is not perfect. Future research could consider triangulation and also measure performance using different types of variables.

References


FUNDING OF MICRO SCALE ENTERPRISES: IS COOPERATIVE FINANCING HELPFUL?

Michael Segun OGUNMUYIWA¹, Oluwakemi Rachel ALADEGOROYE², Adebiyi Julius ABOSEDE³

¹ Department of Business Administration, Olabisi Onabanjo University, Ago-Iwoye, Nigeria. E-mail: msegunmuyiwa@oouagoiwoye.edu.ng
² Department of Cooperative and Rural Development, Olabisi Onabanjo University, Ago-Iwoye, Nigeria. E-mail: chemmyracheal@yahoo.com
³ Department of Business Administration, Olabisi Onabanjo University, Ago-Iwoye, Nigeria. E-mail: adebiyi.abosede@oouagoiwoye.edu.ng

JEL: C71, G21, G23, P13

Abstract

The study investigates the influence of cooperative financing on the performance and survival of micro scale businesses, in Ogun State, Nigeria. A survey research design was adopted to generate cross-sectional data, using a structured questionnaire as the research instrument. From a population of 1,165,848 a sample size of 384 was obtained using the Raosoft sampling size formulae. Regression analysis was used to analyze the data. The findings revealed that cooperatively sourced finance has a positive and significant effect on operational performance of micro scale enterprises but no significant effect on business survival. This implies that survival of micro scale enterprises is beyond financing. The study recommends that cooperative societies, beyond financing should assist members in the area of general management of activities such as records keeping to improve the operational performance as well as the survival rate of businesses in Ogun State, Nigeria.

Key words: Cooperative Societies, operational performance, business survival, micro scale business.

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1. Introduction

Micro scale enterprises are the most common enterprises in Nigeria, engaging in different business activities to meet the demand of the public. The dominance of this type of business is a result of its ease and simplicity of formation and low capital requirement. This form of business has provided employment opportunities and served as source of income to the operators. The sustenance of this type of enterprise requires, among other things, effective financing. The role of funds in getting a business to function properly towards achieving its aims and objectives cannot be over-emphasized. Every department of a business irrespective of the size and nature requires funds. According to Leah (2017), Nwankwo, Ogodo and Ewuim (2016), Aribaba (2012), Nwankwo, Ewuim and Asoya (2012), funding contributes greatly to how a business can accomplish its goals. Funds can be generated via many sources, mainly formal and informal sectors as identified by past studies (such as Ademilua (2017); Nwankwo et al. (2016); Oladejo (2013)). Funds are needed for smooth routine operations and to fight challenges that the business environment may pose to the continuity of the business. Due to the nature of micro scale businesses, most of the business enterprise owners source for funds from the cooperative societies.

According to Kowo, Akonbola and Akinrinola (2018), cooperative societies represent a solid and feasible economic alternative to get funds to finance a business. The cooperative societies are more common in developing economies such as Nigeria and are becoming more popular among small and micro scale business owners (Nwankwo, Ogbodo and Ewuim 2016). Onuoha (2002) opined that cooperative societies in traditional as well as in modern societies help their members in the areas of financing and other advisory services. Similarly, Ademilua (2017) believed that pooling members’ economic forces to ease access to finance is the major aim of cooperative society. In this way, Ademilua (2017) and Oladejo (2013) opined that cooperative societies have promoted micro scale business owners significantly in providing soft credit. Cooperative societies are characterized with self-help value, consensus, fairness, equality, self-responsibility and team spirit in the discharge of their financial services.

The state of the Nigerian economy has made more micro scale businesses to be established. There are many challenges posed at the operational and survival levels of running micro businesses among which are limited access to pools of funds in addition to poor demand of their products, lack of managerial competence, limited access to raw materials and so on. According to Ademilua (2017), limited access to funds is one of the major obstacles of micro scale business enterprises in Nigeria
which affected their operational performance and thereby threatening their survival to continue to exist. Banks are the major financial institutions that grant loans to businesses and the criteria they have placed on obtaining the loan are too stringent for the micro scale business owners to meet. This has resulted into micro scale business owners joining and/or forming different forms of cooperative societies to pool their financial resources for self-help. The role of the cooperative societies in Nigeria in granting credits to their members needs a re-examination to see if the needs of the micro scale enterprises are still being met in relation to their operational performance and business survival.

The objectives of this paper are to: (i) examine the influence of funds from cooperative society on operational performance of micro scale businesses in Ogun State Nigeria, (ii) investigate the effects of funds from cooperative society on the survival of micro scale businesses in Ogun State, Nigeria. The rest of the paper is divided into three sections. Section II is a review of relevant literature, while section III centres on the methodology and empirical results. Section IV houses the conclusion and recommendations of the study.

2. Literature Review

2.1. Cooperative Society Finance

Cooperative society is a self-governing group of individuals united willingly to meet their common economic, social and cultural goals via a jointly-owned and democratically controlled enterprise. Nweze (2001) defined cooperative society as an association voluntarily owned, managed and operated by its members on a non-profit basis. A Cooperative can also be seen as an association based on values of self-help, self-responsibility, democracy, equality and solidarity (Nwankwo et al., 2016). A cooperative society is a business group that is backed by law which is controlled by the members on democratic principles (Lawal, 2006). This definition implies that cooperative society is recognized by the law. Cooperative societies are the societies that are apt for achieving economic growth because they are democratically rooted, flexible, and community-based (Ademola, Oyeleye & Afolabi, 2013). However, it is observed that cooperative societies are now into profit making, most likely because they charge interest rates that are more than enough to cover operating expenses. Nwankwo et al. (2016), thought that cooperative societies are useful as a mechanism for protecting their members against business and financial risks.

Owenvbiugie and Igbinedion (2015) expressed the idea that finance is the life wire of any business, whether developed or developing. Though human resources are
the tools that propel any economic endeavour, fund is very prominent after human resources. Finance is also known as capital, credit and so forth. Financing sources for business is grouped into two- formal and informal sources of finance. The Informal source of finance refers to credit received from family savings, personal savings, friends, relatives and informal money lenders. The formal form of finance is credit from commercial banks and other financial institutions which are termed as external sources. The cooperative finance belongs to the informal financial structure for business finance in theory and in practice (White, Maru & Boit, 2015).

Kowo, Akonbola and Akinrinola (2018) sees cooperative society finance as the financial support a cooperative society gives to the members based on financial capacity of the society and the contribution made by the member. It is in form of credit facilities from the cooperative societies to the members that request for it. Franken and Cook (2013) sees finance from cooperative society as the financial support from a traditional financial institution because they are community-based. Osteberg and Nilsson (2009) regarded cooperative society finance as soft loans usually given to business owners/operators to improve the capacity and general welfare of their business.

Relatively, Ochei, Ojeka, Agwu and Achugamnu (2015) identified emerging sources of funds for cooperative financing which has been practiced in developed countries. These sources include trade credit which involves seeking of fund through credit from the supplier; hire purchase and under this arrangement a cooperative society may enter into hiring rather than outright purchase of the equipment/machinery. This will help to conserve the funds of cooperatives instead of expending huge amount of money on equipment (Ochei et al. 2015). Similarly, lease arrangement, here, as noted by Ochei et al (2015), the lessor (say a finance company) purchases the goods (e. g. equipment) and leases it out to the lessee (cooperative societies) on payment of periodic rental.

2.1.1. Micro Scale Business Performance

The definitions of micro scale business vary from country to country. This makes micro scale business not to have a general definition. According to Ifekwem and Ogundeinde (2016), micro scale businesses are those enterprises dominated by wholesale and retail trade, manufacturing and vehicle repair/servicing, barbing salon, hairdressing salon, provision stores, welding enterprises and so on. Most of the micro scale enterprises are informal, family-owned business with low productivity value and low technological skills. According to International Labour Organisation (ILO, 1999), micro scale businesses are business enterprises that have maximum of 10 employees
Ebitu, Basil and Ufot (2016) see micro scale business as the enterprise with asset base of not more than ₦1.5 million excluding cost of land, but including working capital and staff of not more than 10 people. This implies that for an enterprise to be regarded as micro scale business, such business should not have more than 10 employees. In Nigeria, according to National Bureau of Statistics (2016) there are 36,994,578 micro enterprises out of which 9,602,249 micro enterprises are for Southwest and 1,165,848 for Ogun State.

Performance is the indicator that shows the wellbeing of a business. This is often valued by the goals previously laid down (López-Morales & Gómez-Casas, 2014). Performance is defined by Niculescu and Lavalette (2009) as a state of competitiveness of the economic entity, reached by a level of efficiency and productivity that assures a sustainable presence on the market. According to Chigozie, Aga and Onyia (2018), organizational performance is the aggregated final products of all the organization's work procedures and exercises. Verboncu and Zalman (2015) opined that organisational performance is a particular result in the management, economics and marketing domain which gives characteristics of competitiveness, efficiency and effectiveness to the organizational, structural and procedural components. This study sees organizational performance as operational performance and survival in business.

Also, Saumu (2016) posited that the backbone of every organisation is operational performance. Operational performance is an organizational performance measured as organisational set standards such as productivity, cycle time, waste reduction, and regulatory compliance (Hwang, Han, Jun, & Park, 2014). Every business needs to continue to operate for survival. Business survival is the effort of the management of the business to stand against pressures in form of challenges and problems from any environment of the business. According to Erengwa, Nwuche, & Anyanwu (2017), business survival depends on the business agility to live with the environmental pressure from internal and external environment. Business survival is the continuous existence of a business activity despite the occurrence of ups and downs posed by the business environment that is categorized with uncertainties and unforeseen happenings that can intimidate the existence of business (Omoankhanlen & Ohiria, 2017).

The collective action theory introduced by Olson (1965), focuses on activities of group of individuals towards assisting the members of the group in achieving the members’ goals. This was further espoused by Marshall (1988), to emphasise that collective action theory as action taken by a group (either directly or on its behalf through an organization) in pursuit of members’ perceived shared interests. The
members of the group can contribute towards achieving the shared objective and goal in many ways like in the form of money, labour or in-kind contributions - food, wood and so on (Nwankwo et al. 2016). The collective action theory has been identified to have three key assumptions which are: there must be involvement of a group of individuals; it requires a shared interest among the individuals in the group; and mutual actions in pursuit of the shared interest.

The collective action theory is relevant to this study because it embodies the activities of cooperative societies as a group of people with common interest offering assistance to their members. According to Nwanlwo et al. (2016), the collective action theory describes the activities of cooperative society. Cooperative societies are made up of a group of people who put their resources together in order to overcome challenges that their members may face. Therefore, this study is anchored on the collective action theory because it embodies pooling resources together in order to assist members in need of funds.

2.3. Review of Empirical Studies

The study of Nwankwo, Ogbodo and Ewuim (2016) employed survey research design and primary data sourced through questionnaire in achieving its objectives on effect of cooperative type and age on profit performance among farmers in Anambra State. The study used descriptive statistics, regression analysis and correlation analysis to conclude that type and age profiles had significant influence on gross margin. However, this study failed to include funds from cooperative societies in its objectives.

Anta and Anam (2013) investigated the economic impact of cooperative societies on small scale business development and poverty reduction in Cross River State. The study adopted expose-facto approach and used analysis of variance (ANOVA) to find that there is influence of capital formation among cooperative societies on developing small-scale businesses. Despite including funds in its objectives, the focus of the study was not on micro scale business in Ogun State.

Ademola, Oyeleye, and Afolabi (2013) evaluated the performance of cooperative societies on women entrepreneurs in Nigeria. The study used a questionnaire to collect data from women entrepreneurs in Lagos State. The chi-square results showed that cooperative societies have significant effect on entrepreneurs. Nwankwo, Ewuim and Asoya (2012) examined the role of cooperative societies in SMEs development. The study explored the challenges facing cooperative societies in Nigeria which include bad management, corruption, inadequate financing etc. The study suggested that cooperative society needs to be reformed and monitored.
by government regulatory body (bodies). Thus, the study was not empirically conducted and emphasis was not laid on the role of funds to the SMEs development.

Aribaba (2012) examined the effects of funds provided by cooperative thrift and credit societies on the performance of small-scale businesses in Nigeria. The study used survey research design and primary data were sourced via questionnaire. The study utilized analysis of variance (ANOVA) to conclude that membership of CTCS by entrepreneurs had a positive impact on the performance of small-scale businesses in Nigeria. The study however was not carried out in Ogun State.

The effect of growth drivers on cooperative societies among Nigerian universities was conducted by Kowo, Akinbola and Akinrinola (2018). The study used a cross-sectional research design. Both analysis of variance (ANOVA) and regression analysis were employed to analyse the data. The study revealed that the interest rate of cooperative societies is a significant predictor of patronage of the cooperative. It was also revealed that there exists a relationship between loan repayment periods, savings plan and the satisfaction of members of the cooperative. However, the study was not conducted in SMEs sector and micro scale business was not included in the study objective. The study of Ademilua (2017) on the influence of cooperative society membership on women owned SMEs in Nigeria revealed that cooperative society assist women owned SMEs via financial aid in the form of loan, training, advisory among others.

3. Methodology and Empirical Results

Survey research design was adopted in this study. The study focused on micro scale business operators and the area of the study is the entire Ogun State, made up of twenty (20) Local Government areas and three (3) senatorial districts. Due to the large population of 1,165,848 (National Bureau of Statistics 2016), Raosoft sample size formula was used to determine the sample size of 384 from the study population. The study got data from primary source using the questionnaire as the research instrument.

The questionnaire was structured into two parts - part A and part B. Part A comprises the demographic details of the respondents and part B comprised the questions related to the variables under study. The questions on funds from cooperative society were adapted from study of Leah (2017) while the questions on operational performance were adapted from the study of Saumu (2016) and business survival questions were self-developed by the researchers. Five Likert rating scale was adopted to rank the responses of the respondents. The responses were subjected to a reliability test using Cronbach Alpha. Descriptive statistics was employed to analyze the data and regression analysis was used to test the hypotheses of the study.
3.1. Empirical Results and Findings

3.2. Reliability Test

Table 1

<table>
<thead>
<tr>
<th>Variables</th>
<th>No of Items</th>
<th>Reliability Results (Cronbach Alpha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperative Finance and Operational Performance</td>
<td>11</td>
<td>.787</td>
</tr>
<tr>
<td>Cooperative Finance and Business Survival</td>
<td>10</td>
<td>.744</td>
</tr>
</tbody>
</table>

Source: Authors’ Computation, 2019.

Table 1 displayed the results of the reliability test using Cronbach Alpha. The reliability test was conducted based on the hypotheses formulated to achieve the objectives of the study. The results of the test indicated that cooperative finance and operational performance have 0. 787 with 11 items, while cooperative finance and business survival have a value of 744 with 10 items. This implies that the responses of the respondents are reliable to achieve the study objectives because the Cronbach Alpha values of the hypotheses are greater than 0. 70. According to Nunally (1978), Field (2009), reliability result that is over 0. 70 is considered to be good for a study.

3.3. The Model

The model for this study relies on the Collective Action Theory which embodies pooling resources together in order to assist members in dire need of funds.

The model for the study is stated in behavioural form as follows:

\[ OPMSB = \beta_0 + \beta_1 \, CP + \mu \]  

\[ BSMSB = \alpha_0 + \alpha_1 \, CP + \mu \]

Where OPMSB= Operational Performance of Micro Scale Businesses; BSMSB= Business Survival of Micro Scale Businesses and CP= Cooperative Finance. \( \beta_0, \beta_1, \alpha_0, \alpha_1 \) are the parameters to be estimated and \( \mu = \) the stochastic term.

In a-priori terms, we expect \( \beta_0, \beta_1, \alpha_0, \alpha_1 \) to be positive and this is expressed thus:

\[ \beta_0 > 0, \beta_1 > 0, \alpha_0 > 0, \alpha_1 > 0 \]  

3.4. Test of Hypotheses

There are two hypotheses formulated for this study in line with the objectives and are tested with appropriate statistical tools.

\textbf{H0}_1: Cooperative finance does not have a significant effect on operational performance of micro scale businesses in Ogun State.

\textit{Table 2}

\textbf{Cooperative Finance and Operational Performance}

\textbf{Dependent Variable}: Operational Performance

\begin{tabular}{|l|c|c|c|c|}
\hline
Hypothesis One & Unstandardized Coefficients & Standardized Coefficients & t-value & Sig. \\
& B & Std. Error & Beta & & \\
\hline
1 & (Constant) & 2.814 & .280 & 10.054 & .000 \\
& Cooperative Finance & .312 & .076 & .368 & 4.091 & .000* , ** \\
\hline
R = .368, R^2 = 0.135, F = 16.740, p = 0.000 & & & & & \\
\hline
\end{tabular}


*, ** and *** indicate significance at 1, 5 and 10 percent respectively

Table 2 depicts the regression results of hypothesis one that cooperative finance does not have significant effect on operational performance of micro scale businesses in Ogun State. From the results in table 2, it is revealed that cooperative finance exhibits the appropriate sign in line with theoretical expectation and funds from cooperative society explains the variations in operational performance of micro scale business by 0.135 which is 13.5%, while the remaining percentage are explained by variables not considered in this study. Also, the t-statistic showed that cooperative finance is significant in explaining changes in operational performance of micro scale businesses in Ogun State, Nigeria at both 1 and 5 percent respectively. The results further indicated that cooperative finance has a positive and significant effect on operational performance of micro scale business with a significance of the t-statistics which confirms the significance of the overall regression equation.

\textbf{H0}_2: Cooperative finance does not have significant effect on survival of micro scale businesses in Ogun State.
Table 3

Cooperative Finance and Micro Scale Business Survival

**Dependent Variable**: Business Survival

<table>
<thead>
<tr>
<th>Hypothesis Two</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>2.338</td>
<td>.535</td>
<td>4.373</td>
</tr>
<tr>
<td>Cooperative Finance</td>
<td>.155</td>
<td>.146</td>
<td>.102</td>
<td>1.063</td>
</tr>
</tbody>
</table>

R = .102, R² = .010, F = 1.130, p = 0.290.


*, ** and *** indicate significance at 1, 5 and 10 percent respectively

Table 3 displays the regression results on cooperative finance and micro scale business survival. The findings showed that cooperative finance caused the changes in micro scale business survival by .010 which is about 1%, while the remaining 99% are caused by other factors. Also, the relationship is not significant at any of the conventional levels. Thus, this study affirms that cooperative finance does not have any significant effect on micro scale business survival in Ogun State, Nigeria.

**3.5. Discussion of Findings**

There is no how a business irrespective of the scale or size of operation could be operated and managed without funds. Sourcing for funds seems to be cumbersome and this is one of the gaps the cooperative society is filling in developing economies like Nigeria.

The study established that financial assistance from the cooperative society has positively influenced the routine activities of micro scale businesses and their operational performance in Ogun State, Nigeria. It is evidenced that the more funds are disbursed to micro scale businesses from cooperative society, the more the efficiency in the operational performance of the micro scale businesses. However, the funds from the cooperative societies according to our findings do not determine the survival of micro scale businesses in Ogun State as there could be several other parameters determining business survival not captured in our model. Empirical evidences show that funds from the cooperative societies may not be fully and properly channelled to the purpose it is meant for. The findings of this study are similar to conclusions of previous studies such as Ademilua (2017) Antai and Anam (2013); Oladejo (2013; Nwankwo et al (2012); Aribaba (2012).
4. Conclusion and Recommendations

Based on the findings, this study concludes that cooperative finance has a significant effect on operational performance of business enterprises in the sampled area, albeit, an insignificant effect was found on micro scale business survival. Thus, the study recommends that cooperative societies should continue to make funds available to their members and the members need to utilize the funds for the right purposes to enhance the operations of their business activities. In addition, cooperative societies, beyond financing should assist members in the area of general management of activities such as records keeping to improve the operational performance as well as the survival rate of businesses in Ogun State, Nigeria.

References


LABOUR FORCE PARTICIPATION RATE AND IT IMPLICATIONS ON FOOD SECURITY, FERTILITY RATE AND ECONOMIC GROWTH IN WEST AFRICAN MONETARY ZONE (WAMZ) COUNTRIES

Aduralere Opeyemi OYELADE¹, Onome Bright OGHENETEGA², Favour EFORUOKU³

¹ University of Ibadan, Nigeria. E-mail: adontopdominating@gmail.com
² Pan African University, Institute of Earth and Life Sciences (including Agriculture and Health), University of Ibadan, Nigeria. E-mail: tegabonome@gmail.com
³ Department of Agricultural Extension and Rural Development, Faculty of Agriculture and Forestry, University of Ibadan, Nigeria. E-mail: favouriteeforuoku@gmail.com

JEL: A12, C23, F43, J13, Q18

Abstract

The study investigated the impact of labour force participation rate and its implications on food security, fertility rate and economic growth in the West African Monetary Zone (WAMZ). Using data from 6 countries over the period of 1990 to 2016 and pool autoregressive distributed lag (PARDL) bounds testing procedure was employed. The result from the study showed that female labour force participation and health expenditure per capita determine food security and male labour force participation, female labour force participation, gross capita formation, health education per capita and enrolment in secondary education are the variables that determine fertility rate, while male labour force participation, female labour force participation, health expenditure per capita and enrolment in secondary education affect GDP per capita. The study recommended that policies should be directed toward increasing female labour force participation which will compliment male labour force participation as well as increase decent and productive work opportunities for female workers which will promote GDP per capita, leading to reduction in fertility rate and promote food security among member countries. Furthermore, family-friendly policies will further encourage females to participate in the labour market. Therefore, more efforts should be made to promote female labour force participation as the entire WAMZ countries will benefit from the growth and welfare improvement.
1. Introduction

Labour force participation rate is the share of people aged sixteen and older who are either working or actively looking for work. It is one of the important indicators of economic growth and development because it determines the efficient use of labour which is one of the most vital factors of production (Hornstein, Kudlyak, and Schweinert, 2018). However, labour force participation faces the gender inequality problem despite the fact that women constitute the majority of the population in virtually every country. The participation of women within the labour force market falls behind men from past to present as men are more likely to participate in labour markets than women (Verick, 2018; Ortiz-Ospina and Tzvetkova, 2017).

In recent decades, these gender differences in participation rates have been narrowing substantially with an increased share of women in the labour force. Statistically, it is observed that women’s labour force participation rate increased to 70% within the developed countries in the last decade (Doğan and Akyü, 2017). Furthermore, a significant portion of both theoretical and empirical research which focused on the relationship between an increase in the number of women in the labour force and the level of economic growth found that the relationship is defined by a long-run U-shaped relationship. Although this relationship is relatively stable and correlated with time, research findings still differ between different countries and groups of countries (Lechman and Kaur, 2015).

Increased female labour force participation has been linked to fertility decline in developed countries. Fertility rate changes with increased labour market participation of women, this affects fertility through three main channels: an income effect, a substitution effect, and an empowerment effect (Basu, 2006). First, female
employment contributes to total household income, this additional income can be used in raising more children or in improving childcare quality. Although the income effect can lead to either increased or reduced fertility, generally fertility drops if household income rises from female labour force participation (Galor and Weil, 2000). Second, employed women have a higher opportunity cost of raising children, and substitute productive labour for reproductive labour. This substitution effect results in decreased fertility. Third, working outside the household and earning an income empowers women. Generally, women are likely to have lower-fertility preferences than men which has been recognised to be the case for Sub-Saharan Africa and West African monetary zone countries (Upadhay and Karasek, 2010). Hence, women’s empowerment within the household will reduce fertility rates. Through employment women widen their social network, which tend to lower fertility preferences and increase knowledge about birth control (Broeck, and Maertens, 2015; Cheng, 2011).

Overall in Africa, fertility rate which determines population growth rates and economic growth are critical factors when considering food security. Although global population growth rates are slowing down, Sub-Saharan Africa has a population growth rate of about 3 percent yearly, which is the highest population growth rate in the world (Bongaarts, 2009; World Population Review, 2019). By 2050, even if fertility rates decline, the population of the region is projected to more than double (UN, 2019). Sadly, Sub-Saharan Africa’s food production has continued to grow more slowly than its population, in contrast to every other region of the world (Bish, 2016). Its per capita food production has declined since the 1970s (Funk and Brown, 2009), hence this area holds the largest proportion of food-insecure people, with one in four people undernourished (FAO, IFAD, UNICEF, WFP and WHO, 2019). Most of the countries with the highest numbers of people facing food insecurity also have high fertility rates and rapid population growth (Population Action International, 2012). This increases the challenge of adequately meeting nutritional needs.

Achieving food security in West African monetary zone countries requires investing more in labour force participation. This could unswervingly lead to an increase in food production as a large percent could directly contribute to the production of food. In addition, the amount of income generated from work determines the amount and quality of food that workers and their families can purchase. Given the fact that poor people may spend as much as 70 percent of their income on food (FAO, 2011), an increase in personal income can have immediate effects on household food security. In the long term, it is likely that increased labour participation also enables households to invest in better nutrition (FAO, 2017),
enhance productivity and have a multiplier effect on the economic growth of West African monetary zone countries. Therefore, an understanding of the current trend and correlation of how labour force participation influence food security, fertility rate and economic growth is important for policy makers so as to design and implement policies from this point. Furthermore, it will be interesting to understand what parts of the participation rate reflect a longer trend and which are considered more transitory factors that adjust with the health of the economy and labour market capacity. Finally, the period covered by the study in this context will contribute to the literature through its difference in methodology (pool autoregressive distributed lag bounds testing procedure) and its unique sample (West African Monetary Zone (WAMZ) countries) used.

2. Theories, Model/Framework for the Study

The theoretical framework of the study follows the investment theory of human capital (Becker, 1962; Bowles and Gintis, 1975 & Becker, 1994) (which) presents human education as both a public and private investment decision for governments and its people. As a public investment, the fundamental argument is that investing in education leads to economic growth through increased productivity, social stability and healthier lifestyles. On the other hand, as a private investment choice, investing in education leads to increased lifetime earnings for those with more years of schooling; access to better paying jobs; reduced time spent in the unemployment market and speedier transitions to enhanced career prospects (Becker, 1994).

\[ Y_t = f(A_t, L_t^\alpha, K_t^\beta, H_t^\gamma, E_t^\pi) \]

Where \( Y_t \) is output, \( A_t \) is technology, \( L_t \) is labour force, \( K_t \) is physical capital, \( H_t \) is health and \( E_t \) is education while \( \alpha + \beta + \gamma + \pi = 1 \). The production function is therefore homogenous of degree 1 and exhibits a constant returns to scale. Normalizing the function by taking the natural log will produce a linear equation expressed as:

\[ \ln Y_t = \ln A_t + \alpha \ln L_t + \beta \ln K_t + \gamma \ln H_t + \pi \ln E_t \]

Let \( \ln A_t \) be \( \gamma \) since intercept cannot be logged.

\[ \ln Y_t = \gamma + \alpha \ln L_t + \beta \ln K_t + \gamma \ln H_t + \pi \ln E_t \]

For the purpose of this study, three models will be specified based on objectives of the study

\[ FS_t = \phi + \phi_1 MLFPR_t + \phi_2 FLFPR_t + \phi_3 LNGCF_t + \phi_4 LNHE_t + \phi_5 LNEDU_t + \mu \]
\[ FR_t = \delta + \delta_1 \text{MLFPR}_t + \delta_2 \text{FLFPR}_t + \delta_3 \text{LNGCF}_t + \delta_4 \text{LNHE}_t + \delta_5 \text{LNEDU}_t + \mu \ldots (5) \]

\[ \text{LNGDP}_t = \phi + \phi_1 \text{MLFPR}_t + \phi_2 \text{FLFPR}_t + \phi_3 \text{LNGCF}_t + \phi_4 \text{LNHE}_t + \phi_5 \text{LNEDU}_t + \mu \ldots (6) \]

Where FS is Food Security (using Household Dietary Diversity Scale (HDDS) – measures the number of different food groups consumed over a specific reference period); FR is Fertility Rate (Births per women); GDP per capita, PPP (current international $); MLFPR is Male Labour Force Participation (% of Male Population Age 15+ Modeled ILO Estimate); FLFPR is Female Labour Force Participation (% of Female Population Age 15+ Modeled ILO Estimate); GCF is Gross Capital Formation (current international $); HE is Health Expenditure per Capita, (current US$) and EDU is Enrolment in Secondary Education, both Sexes (number) and \( \mu_t \) is White noise error term that is \( \mu_t \approx (0, \sigma \mu) \).

3. Methodology

The study makes use of the pool autoregressive distributed lag (PARDL) bounds testing procedure. The ARDL bounds testing procedure to co-integration examines the long-run equilibrium relationship between a dependent variable and a set of regressors in levels irrespective of the order of integration of the regressors: whether \( I(0) \), \( I(1) \) or mutually/fractionally co-integrated. The ARDL model for the three models are specified below

\[ \text{FS}_t = \phi + \sum_{k=1}^{n} \phi_1 \text{MLFPR}_{k-1} + \sum_{k=1}^{n} \phi_2 \text{FLFPR}_{k-1} + \sum_{k=1}^{n} \phi_3 \text{LNGCF}_{k-1} + \sum_{k=1}^{n} \phi_4 \text{LNHE}_{k-1} + \sum_{k=1}^{n} \phi_5 \text{LNEDU}_{k-1} + \lambda \text{ECM}_{t-1} + \lambda_6 \text{MLFPR}_{t-1} + \lambda_7 \text{FLFPR}_{t-1} + \lambda_8 \text{LNGCF}_{t-1} + \lambda_9 \text{LNHE}_{t-1} + \lambda_{10} \text{LNEDU}_{t-1} + \mu_t \ldots (7) \]

\[ \text{FR}_t = \delta + \sum_{k=1}^{n} \delta_1 \text{MLFPR}_{k-1} + \sum_{k=1}^{n} \delta_2 \text{FLFPR}_{k-1} + \sum_{k=1}^{n} \delta_3 \text{LNGCF}_{k-1} + \sum_{k=1}^{n} \delta_4 \text{LNHE}_{k-1} + \sum_{k=1}^{n} \delta_5 \text{LNEDU}_{k-1} + \lambda \text{ECM}_{t-1} + \delta_6 \text{MLFPR}_{t-1} + \delta_7 \text{FLFPR}_{t-1} + \delta_8 \text{LNGCF}_{t-1} + \delta_9 \text{LNHE}_{t-1} + \delta_{10} \text{LNEDU}_{t-1} + \mu_t \ldots (8) \]

\[ \text{LNGDP}_t = \phi + \sum_{k=1}^{n} \phi_1 \text{MLFPR}_{k-1} + \sum_{k=1}^{n} \phi_2 \text{FLFPR}_{k-1} + \sum_{k=1}^{n} \phi_3 \text{LNGCF}_{k-1} + \sum_{k=1}^{n} \phi_4 \text{LNHE}_{k-1} + \sum_{k=1}^{n} \phi_5 \text{LNEDU}_{k-1} + \lambda \text{ECM}_{t-1} + \phi_6 \text{MLFPR}_{t-1} + \phi_7 \text{FLFPR}_{t-1} + \phi_8 \text{LNGCF}_{t-1} + \phi_9 \text{LNHE}_{t-1} + \phi_{10} \text{LNEDU}_{t-1} + \mu_t \ldots (9) \]

To detect the presence of co-integration among variables, a decision must be made whether lagged levels of dependent and independent variables should be retained or not. The idea is to test for the absence of the level relationship between dependent variables and their determinants by excluding lagged level variables. This is an explicit test for co-integration among variables. Two asymptotic critical values are used to detect the presence of co-integration: one set corresponding to lower values purely for \( I(0) \) regressors and the other set for upper values purely for \( I(1) \).
regressors while mutually co-integrated cases are also catered for by the bounds created by the two critical values. A conclusive decision about the null is made when the calculated F-statistic falls outside the critical value bounds. An inconclusive inference about the null exists when the calculated F-statistic falls within the critical value bounds. Co-integration is confirmed among variables if the F-statistic exceeds the upper critical value while the null of no co-integration cannot be rejected if the F-statistic is sensitive to the lag length for each differenced variable. Once co-integration is established, estimates of the long-run coefficients can be obtained and the ECM associated with the long-run estimates can also be estimated. The optimal lag length for each of the first differenced variables is chosen based on the AIC and/or SBIC. The study focuses on member countries of the West African Monetary Zone (WAMZ) which comprises Gambia, Ghana, Guinea, Liberia, Nigeria and Sierra Leone and the balanced panel data ranges from 1990 to 2016.

4. Results and Discussions

Table 1 reports the descriptive statistics and male labour force participation has the highest mean of 71.871% and health expenditure per capita has the lowest mean of 5.135% while all the variables fall within their maximum and minimum. Also, fertility rate and female labour force participation are negatively skewed while others are positively skewed and the Jarque-Bera statistic rejects the null hypothesis of normal distribution at the 1%, 5% and 10% level of significance for all the variables. GDP per capita, female labour force participation, health expenditure per capita and enrolment in secondary education are leptokurtic from the result of the kurtosis while others are platykurtic, because a distribution with a coefficient smaller than 3 is platykurtic, while distribution larger than 3 is said to be leptokurtic.

**Table 1**

<table>
<thead>
<tr>
<th></th>
<th>FS</th>
<th>FR</th>
<th>LN (GDP)</th>
<th>MLFPR</th>
<th>FLFPR</th>
<th>LN (GCF)</th>
<th>LN (HE)</th>
<th>LN (EDU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>92.140</td>
<td>5.644</td>
<td>16.486</td>
<td>71.871</td>
<td>62.150</td>
<td>49.200</td>
<td>5.135</td>
<td>13.229</td>
</tr>
<tr>
<td>Median</td>
<td>93.545</td>
<td>5.803</td>
<td>12.306</td>
<td>71.150</td>
<td>64.500</td>
<td>60.100</td>
<td>2.591</td>
<td>44.428</td>
</tr>
<tr>
<td>Maximum</td>
<td>172.220</td>
<td>6.669</td>
<td>60.039</td>
<td>85.200</td>
<td>72.700</td>
<td>89.800</td>
<td>32.165</td>
<td>90.568</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>28.019</td>
<td>0.659</td>
<td>12.306</td>
<td>7.634</td>
<td>8.837</td>
<td>15.100</td>
<td>2.071</td>
<td>21.049</td>
</tr>
<tr>
<td>Skewness</td>
<td>0.434</td>
<td>-0.622</td>
<td>1.848</td>
<td>0.271</td>
<td>-1.022</td>
<td>4.249</td>
<td>2.409</td>
<td>2.055</td>
</tr>
</tbody>
</table>
The degree and direction of association among the variables are shown in Table 2. Correlation analysis is used for two purposes, which are to know the degree of linear association among variables and to see whether there is no multicollinearity among variables. A number of the signs exist and also, no serious problem of multicollinearity exists, as the Pairwise correlation coefficient for any of the variables does not exceed 0.80 (Gujarati, 2003).

**Table 2**

Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>FS</th>
<th>FR</th>
<th>LN (GDP)</th>
<th>MLFPR</th>
<th>FLFPR</th>
<th>LN (GCF)</th>
<th>LN (HE)</th>
<th>LN (EDU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FS</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FR</td>
<td>-0.670</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP</td>
<td>0.299</td>
<td>-0.274</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MLFPR</td>
<td>-0.077</td>
<td>0.006</td>
<td>-0.196</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FLFPR</td>
<td>0.079</td>
<td>-0.329</td>
<td>-0.378</td>
<td>0.565</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GCF</td>
<td>0.156</td>
<td>-0.036</td>
<td>0.709</td>
<td>-0.272</td>
<td>-0.393</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HE</td>
<td>0.209</td>
<td>-0.001</td>
<td>0.729</td>
<td>-0.382</td>
<td>-0.631</td>
<td>0.634</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>EDU</td>
<td>0.117</td>
<td>-0.009</td>
<td>0.785</td>
<td>-0.380</td>
<td>-0.705</td>
<td>0.769</td>
<td>0.720</td>
<td>1</td>
</tr>
</tbody>
</table>

**Source:** Authors' Computation.

Panel unit root testing emerged from time series unit root testing in Table 3. The major difference to time series testing of unit roots is that it has to consider asymptotic behaviour of the time-series dimension $T$ and the cross-sectional dimension $N$. The way in which $N$ and $T$ converge to infinity is critical if one wants to determine the asymptotic behaviour of estimators and tests used for nonstationary panels (Levin et al, 2002). The Levin, Lin & Chu t*, Im, Pesaran and Shin W-stat, ADF - Fisher Chi-square and PP - Fisher Chi-square were conducted both in level and first difference with constant. The result shows that unit root in level cannot be rejected for food security, GDP per capita, gross capital formation, health expenditure
and Enrolment in secondary education but can be rejected for fertility rate, male labour force participation and female labour force participation while after the first difference, unit root is stationary for food security, GDP per capita, gross capital formation, health expenditure and Enrolment in secondary education. Both the Im-Pesaran-Shin and Fisher-type test relax the restrictive assumption of Levin-Lin-Chu that $\rho_i$ must be the same for all series under the alternative hypothesis (Im et al, 2003). Also, when $N$ is small, the empirical size of both tests is close to their nominal size of 5 percent. (Fisher shows some distortions at $N = 100$). Therefore, the result affirms combinations of level and first difference for all the series indicating I(0) and I(1).

Table 3

Panel Unit Root Test with no Trend

<table>
<thead>
<tr>
<th>Series</th>
<th>FS</th>
<th>FR</th>
<th>LN (GDP)</th>
<th>MLFPR</th>
<th>FLFPR</th>
<th>LN (GCF)</th>
<th>LN (HE)</th>
<th>LN (EDU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levin, Lin &amp; Chu t*</td>
<td>-1.230</td>
<td>-4.229*</td>
<td>-1.125</td>
<td>-3.707*</td>
<td>-3.038*</td>
<td>0.593</td>
<td>1.134</td>
<td>0.615</td>
</tr>
<tr>
<td>Im, Pesaran and Shin W-stat</td>
<td>1.024</td>
<td>-2.887*</td>
<td>1.100</td>
<td>-2.766*</td>
<td>-1.831**</td>
<td>1.551</td>
<td>2.189</td>
<td>2.109</td>
</tr>
<tr>
<td>ADF - Fisher Chi-square</td>
<td>6.387</td>
<td>29.201*</td>
<td>7.832</td>
<td>27.242*</td>
<td>23.848**</td>
<td>6.085</td>
<td>3.060</td>
<td>4.052</td>
</tr>
<tr>
<td>PP - Fisher Chi-square</td>
<td>9.392</td>
<td>40.376*</td>
<td>4.098</td>
<td>36.475*</td>
<td>24.244**</td>
<td>5.592</td>
<td>3.153</td>
<td>5.698</td>
</tr>
</tbody>
</table>

First Difference

<table>
<thead>
<tr>
<th>Series</th>
<th>FS</th>
<th>FR</th>
<th>LN (GDP)</th>
<th>MLFPR</th>
<th>FLFPR</th>
<th>LN (GCF)</th>
<th>LN (HE)</th>
<th>LN (EDU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levin, Lin &amp; Chu t*</td>
<td>-4.280*</td>
<td>-</td>
<td>-1.904**</td>
<td>-</td>
<td>-</td>
<td>-6.760*</td>
<td>-2.975*</td>
<td>-3.816*</td>
</tr>
<tr>
<td>Im, Pesaran and Shin W-stat</td>
<td>-5.770*</td>
<td>-</td>
<td>-3.929*</td>
<td>-</td>
<td>-</td>
<td>-7.086*</td>
<td>-4.217*</td>
<td>-6.986*</td>
</tr>
<tr>
<td>ADF - Fisher Chi-square</td>
<td>54.883*</td>
<td>-</td>
<td>40.367*</td>
<td>-</td>
<td>-</td>
<td>69.207*</td>
<td>39.566*</td>
<td>67.954*</td>
</tr>
<tr>
<td>PP - Fisher Chi-square</td>
<td>125.663*</td>
<td>-</td>
<td>56.994*</td>
<td>-</td>
<td>-</td>
<td>83.527*</td>
<td>93.133*</td>
<td>111.289*</td>
</tr>
</tbody>
</table>

Source: Authors' Computation.

Note: * , **, and *** denote rejection of the null of non-stationary at 1%, 5% and 10% levels of significance.

There is a need for optimal lag length before conducting the panel co-integration test, the optimum lag length of the model VAR is selected based on the least values of Akaike information criterion (AIC) and the Schwarz criterion (SIC) and this is
presented in Table 4. The study made use of up to three lags and the results supported the choice of optimum lag one based on Schwarz criterion because Schwarz criterion is superior to Akaike information criterion. Therefore, the minimum lag option for the study is based on lag one and this was used for further analysis in the study.

**Table 4**

<table>
<thead>
<tr>
<th>Lag</th>
<th>LogL</th>
<th>LR</th>
<th>FPE</th>
<th>AIC</th>
<th>SC</th>
<th>HQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-9146.510</td>
<td>NA</td>
<td>2.29e+45</td>
<td>127.1460</td>
<td>127.3110</td>
<td>127.2130</td>
</tr>
<tr>
<td>1</td>
<td>-7169.246</td>
<td>3707.369</td>
<td>6.59e+33</td>
<td>100.5729</td>
<td>102.0578*</td>
<td>101.1762</td>
</tr>
<tr>
<td>2</td>
<td>-7036.753</td>
<td>233.7037</td>
<td>2.57e+33</td>
<td>99.62156</td>
<td>102.4264</td>
<td>100.7613</td>
</tr>
<tr>
<td>3</td>
<td>-6931.090</td>
<td>174.6363*</td>
<td>1.47e+33*</td>
<td>99.04292*</td>
<td>103.1677</td>
<td>100.7190*</td>
</tr>
</tbody>
</table>

*Source: Authors’ Computation.*

*Notes: * indicates lag order selected by the criterion, LR: sequential modified LR test statistic (each test at 5% level), FPE: Final prediction error, AIC: Akaike information criterion, SC: Schwarz information criterion & HQ: Hannan-Quinn information criterion.

Since the unit root test confirmed the combination of order zero and one that I(0) and I(1), the next step is ARDL bounds test for co-integration and result from the bounds test co-integration is presented in Table 5. The result revealed that computed F-Statistics for food security Wald test was 4.441. The value exceeds both the upper bounds and lower bounds critical values for 5% and 10% level of significance indicating evidence of long-run relationship between food security with all its determinants. The result revealed that computed F-Statistics for food security Wald test was 4.469. The value exceeds both the upper bounds and lower bounds critical values for 5% and 10% level of significance indicating evidence of long-run relationship between fertility rate with all its determinants. The result revealed that computed F-Statistics for food security Wald test was 5.118. The value exceeds both the upper bounds and lower bounds critical values for all level of significance indicating evidence of long-run relationship between GDP per capita with all its determinants.
The short-run and long-run ARDL results for labour force participation rate and its implications on food security, fertility rate and economic growth in West African Monetary Zone (WAMZ) countries are presented in Table 6. Since the unit root test confirmed the combination of order zero and one that I(0) and I(1) and the ARDL bounds test for co-integration yield evidence of long-run relationship, the short-run and long-run effect of the variables were examined.

The result from the model of food security indicate that female labour force participation and health expenditure per capita determine food security in the short-run while female labour force participation determine food security in the long-run. This result implies that the more females participate in labour force, the more the food security will be in the WAMZ countries. Therefore, the four pillars of food security which are availability, accessibility, utilization and stability will increase in WAMZ countries if and only if females also engage in the labour market. Also, increase in health expenditure per capita leads to increase in food security indicating that quality/quantity of health improve food security in WAMZ countries. The benchmark for error correction term (ECT) is that it must be negative and significant at any level of significance and it will be used to examine how the variables will converge to equilibrium. Therefore, the coefficient of the error correction term (ECM) indicated that 11.5% deviation from the long-run equilibrium in food security is corrected for annually. The adjusted R-square of 0.813 indicated that about 81.3% total variation in

### Table 5: Bounds Testing for Co-integration Analysis

<table>
<thead>
<tr>
<th>Bounds Level</th>
<th>Food Security (FS)</th>
<th>Fertility Rate (FR)</th>
<th>GDP per Capita (GDP)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wald F-statistic: 4.440816; K = 5</td>
<td>Wald F-statistic: 4.469476; K = 5</td>
<td>Wald F-statistic: 5.118; K = 5</td>
</tr>
<tr>
<td>Lower Bound</td>
<td>Upper Bound</td>
<td>Lower Bound</td>
<td>Upper Bound</td>
</tr>
<tr>
<td>1% critical bounds value</td>
<td>3.41</td>
<td>4.68</td>
<td>3.41</td>
</tr>
<tr>
<td>5% critical bounds value</td>
<td>2.62</td>
<td>3.79</td>
<td>2.62</td>
</tr>
<tr>
<td>10% critical bounds value</td>
<td>2.26</td>
<td>3.35</td>
<td>2.26</td>
</tr>
</tbody>
</table>

**Source:** Authors’ Computation.

**Notes:** *, **, *** denote significance level at 1%, 5%, and 10% levels, respectively. Maximum lags on Schwartz information criterion (SIC) is 1.
food security can be explained by all the explanatory variables and the F-statistic of 70.720 with the probability value of 0.000 implied that the overall model is statistically significant at 1% level of significance while the Durbin-Watson statistic of 2.317 means that there is no serious autocorrelation in the model.

Furthermore, the result from the model of fertility rate shows that male labour force participation, female labour force participation, gross capitap formation, health education per capita and enrolment in secondary education are the variables that determine fertility rate in the short-run, while female labour force participation and enrolment in secondary education are the variables that determine fertility rate in the long-run. The outcomes of this result imply that male labour force participation increases the fertility rate, while female labour force participation decreases fertility rate. As more males participate in the labour market this will increase their earnings and as they earn more, they tend to increase their family size but as female participation rate increases, they tend to reduce their family size so that they can focus more on their work. Also, gross capital formation, health expenditure per capita and enrolment in secondary education have negative impact on fertility rate meaning that improvement in healthcare through government spending and as well as people increase their knowledge through education, these lead to reduction in fertility rate per family in the WAMZ countries. The coefficient of the error correction term (ECM) indicated that 5.6% deviation from the long-run equilibrium in fertility rate is corrected for annually. The adjusted R-square of 0.992 indicated that about 99.2% total variation in fertility rate can be explained by all the explanatory variables and the F-statistic of 510.708 with the probability value of 0.000 implied that the overall model is statistically significant at 1% level of significance while the Durbin-Watson statistic of 2.044 means that there is no serious autocorrelation in the model.

Moreover, male labour force participation and female labour force participation have different signs in determining GDP per capita for both short-run and long-run, while enrolment in secondary education positively affect GDP per capita in the short-run, and health expenditure per capita positively affect GDP per capita in the long-run. The implications of this result are that short time jobs that have no job security, that are done in the short-run by both male and female do not lead to an increase in GDP per capita while jobs that have security for long-run increase GDP per capita in the WAMZ countries. Workers health and their level of education increase GDP per capita by 0.53% and 0.099% respectively. Education and health are very vital for greater productivity which will lead to more income for both individuals and the economies of WAMZ countries as a whole. The error correction term (ECM) indicated that 19.5% deviation from the long-run equilibrium in GDP per capita is
corrected for annually. The adjusted R-square of 0.960 indicated that about 96% total variation in GDP per capita can be explained by all the explanatory variables and the F-statistic of 387.584 with the probability value of 0.000 implied that the overall model is statistically significant at 1% level of significance while the Durbin-Watson statistic of 1.602 means that there is no serious autocorrelation in the model.

**Table 6**

Parsimonious Long-run and Short-run
(Pool Mean Group/ARDL) ARDL-ECM Results

<table>
<thead>
<tr>
<th>Variables</th>
<th>Long-run</th>
<th>Short-run</th>
<th>Long-run</th>
<th>Short-run</th>
<th>Long-run</th>
<th>Short-run</th>
</tr>
</thead>
<tbody>
<tr>
<td>D(MLFPR)_t</td>
<td>-0.661 (0.650)</td>
<td>-0.922 (0.111)</td>
<td>0.050 (0.113)</td>
<td>0.051 (0.000)*</td>
<td>0.017 (0.067)**</td>
<td>-0.017 (0.006)**</td>
</tr>
<tr>
<td>D(FLFPR)_t</td>
<td>2.598 (0.066)**</td>
<td>3.060 (0.000)*</td>
<td>-0.129 (0.001)*</td>
<td>-0.085 (0.000)*</td>
<td>0.022 (0.012)**</td>
<td>-0.025 (0.000)*</td>
</tr>
<tr>
<td>D(LNGCF)_t</td>
<td>-1.946 (0.851)</td>
<td>3.071 (0.116)</td>
<td>0.047 (0.813)</td>
<td>-0.066 (0.001)*</td>
<td>0.077 (0.236)</td>
<td></td>
</tr>
<tr>
<td>D(LNHE)_t</td>
<td>7.149 (0.610)</td>
<td>15.441 (0.000)*</td>
<td>0.328 (0.274)</td>
<td>-0.278 (0.000)*</td>
<td>0.530 (0.000)*</td>
<td>0.015 (0.269)</td>
</tr>
<tr>
<td>D(LNEDU)_t</td>
<td>10.289 (0.408)</td>
<td>1.188 (0.413)</td>
<td>-0.565 (0.026)**</td>
<td>-0.144 (0.000)*</td>
<td>0.121 (0.127)</td>
<td>0.099 (0.000)*</td>
</tr>
<tr>
<td>ECM(-1)</td>
<td>-</td>
<td>-0.115 (0.005)*</td>
<td>-</td>
<td>-0.056 (0.024)**</td>
<td>-</td>
<td>-0.195 (0.000)*</td>
</tr>
<tr>
<td>CONS</td>
<td>-135.558 (0.354)</td>
<td>-</td>
<td>15.214 (0.000)*</td>
<td>-</td>
<td>-0.293 (0.752)</td>
<td>-</td>
</tr>
<tr>
<td>R-Square</td>
<td>0.825</td>
<td>0.974</td>
<td>0.963</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adj R-Square</td>
<td>0.813</td>
<td>0.972</td>
<td>0.960</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-Statistics</td>
<td>70.720 (0.000)*</td>
<td>510.708 (0.000)*</td>
<td>387.584 (0.000)*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Akaike info criterion (AIC)</td>
<td>7.889</td>
<td>-1.505</td>
<td>-1.230</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schwarz criterion (SIC)</td>
<td>8.100</td>
<td>-1.275</td>
<td>-1.020</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Durbin-Watson Stat.</td>
<td>2.317</td>
<td>2.044</td>
<td>1.602</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Authors’ Computation*

*Notes: *, **, *** denote significance level at 1%, 5%, and 10% levels, respectively. Maximum lags on Schwartz information criterion (SIC) is 1.*
5. Conclusion and Recommendation

The result from the study showed that female labour force participation and health expenditure per capita determine food security and male labour force participation, female labour force participation, gross capita formation, health education per capita and enrolment in secondary education are the variables that determine fertility rate, while male labour force participation, female labour force participation, health expenditure per capita and enrolment in secondary education affect GDP per capita. The study recommends that policies should be directed toward increasing female labour force participation which will complement male labour force participation as well as increase decent and productive work opportunities for female workers which will promote GDP per capita, leading to a reduction in fertility rate, and promote food security among member countries. Also, family-friendly policies will further encourage females to participate in the labour market. Therefore, more efforts should be made to promote female labour force participation as all WAMZ countries will benefit from the growth and welfare improvement that it will generate. WAMZ countries governments need to build their capacity through investment in health and education in order to enhance the productivity of the labour force which will lead to economic growth, reduction in the fertility rate as well as promote food security.

References


LABOUR FORCE, NATIONAL SAVINGS AND THE MANUFACTURING SECTOR PRODUCTIVITY IN NIGERIA

Adeyemi Olayiwola BABASANYA¹, Olukayode Emmanuel MAKU², Joseph Nwabueze AMAEFULE³

¹ Department of Economics, Olabisi Onabanjo University, Ago-Iwoye, Ogun State, Nigeria. E-mail: olusanya2002@yahoo.co.uk
² Department of Economics, Olabisi Onabanjo University, Ago-Iwoye, Ogun State, Nigeria. E-mail: kaymarks73@yahoo.co.uk
³ Department of Education, Babcock University, Ilisan Remo, Ogun State, Nigeria. E-mail: josephamaefule@gmail.com

JEL: O14, P24, C41, E13

Abstract

The study evaluated the role of sectoral labour force and the national savings on the manufacturing sector output in Nigeria from 1985 to 2019, a period of 35 years. Data was sourced from Central Bank Of Nigeria (CBN) statistical bulletin various issues up until 2017, National Bureau of Statistics (NBS), and World Development Index (WDI). Data were analyzed using Vector Error Correction Model (VECM). The VECM result revealed that national savings and labour force have long run positive effect on the manufacturing sector output, while exchange rate and inflation have long-run negative effect on the manufacturing sector output. It could be deduced from this study that national savings, labour force in the industrial sector, inflation and exchange rate are very critical factors that determine the growth and survival of the manufacturing sector. Hence, it was recommended that the government look critically to the manufacturing sector and revamp the sector by making credit facility to the sector, and increase the use of domestic raw materials.

Key words:
Manufacturing output, National savings, inflation, labour force, VECM.

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1. Introduction

A vibrant manufacturing sector has been acclaimed as a sure means of boosting economic growth and raising the standard of living. Nigeria has been regarded as the nation blessed with abundant resources; human and material. However, the underutilization of these potentials has amplified negative effects such as poverty, low level of standard of living etc. on the economy. In the modern world, the manufacturing sector is described as the basis on which the nation’s economic efficiency is compared, ranked and determined (Danladi, Akomolafe, Babalola, and Oladipupo, 2015).

Manufacturing activities declined in Nigeria in the 1980s, as most companies were affected as a result of the global economic meltdown that further led to the closure of the industries as unfavourable conditions lingered, rapid industrial development is the key to the transition from static and subsistence economy to a dynamic and self-reliant one (Otalu and Adneru, 2015). Moreover, it is widely held that a rapid rate of industrial growth would produce the much needed less dependent economy and thus facilitate the attainment of national objectives of enhanced real per capita income, greater employment generation, increased local sourcing of raw materials and development of local industrial technology. Based on the foregoing, Nigeria, not only assigned a fundamental role to industrialization in the process of economic development, has also actively promoted it through a number of strategies ranging from primary exports, import substitution to export promotion in line with the prevailing development (Otalu and Adneru, 2015). Nigeria has mounted several other forms of policies to promote industrial output growth. Most of these policies are as a result of different prevailing economic periods/situations in the country and during these periods the patterns of industrial output growth have been uneven (Imide, 2019).

Utemadu (2002) stated that countries that are able to accumulate high level of capital tend to achieve fast rates of economic growth and development. Secondly, the quality of the government and its economic policies matter a lot. The radical theorist and early proponents of development economics were of the view that growth could be internalized. Developments in the world economies have shown that it is futile for economies to isolate themselves from rapidly integrating world (Essien & Bawa, 2007). Therefore, to finance adequate investment required for proper economic growth, every economy needs to generate sufficient savings or borrow from abroad. However, borrowing from abroad, according to Stephen and Obah (2017), is not proper strategy for economic growth, as it may not only have adverse effects on the balance of payment as the loans will have to be serviced in the future, but also carries
foreign exchange risks, national savings become indispensable for economic growth, because, they can provide the domestic resources that are needed to fund the investment effort of a country (Momi, 2015). Savings are considered as an indispensable tool for economic growth and development. They reflect in capital formation through increase capital stock and impact made on the capacity to generate more and higher income (Stephen and Obah, 2017).

It has been observed that for an economy to grow, the industrial sector and in particular, the manufacturing sub-sector must be the key driver of the economy (Ajudua and Ojima, 2016). Therefore, incompetent or poor industrial development policies have been recognized as major factors that adversely affect the well-being and socio-economic improvement of the people in developing countries and such policies are the major contributing factors to low value added and low economic growth (Anyanwu, 1993).

The manufacturing sector is thus widely considered to be the ideal industry to drive development in Africa as it offers prospects of a growing availability of manufactured products, increased employment, greater efficiency and improved balance of payments which will stimulate and promote productivity, improve living condition and serves as a catalyst for economic growth (Ajudua and Ojima, 2016). The background of this study has revealed the important role the manufacturing sector plays in the economic development of the country and the various challenges therein, hence this study examines the effect of the labour force and national income savings on the manufacturing sector growth in Nigeria from the periods of 1985 to 2019. The main purpose of this study is to evaluate the role of sectoral labour force and the national savings on the manufacturing sector output in Nigeria. This study assumes that the national savings are invested in the manufacturing sector and the labour force has the required qualification, at least a secondary school level.

To actually reveal the role of the national savings, exchange rate and inflation on the Nigeria manufacturing sector, the theoretical framework adopted for this study is the neoclassical growth model production function

\[ Y = AF(K, L) \quad (1) \]

Where \( Y \) is Gross Domestic Product (GDP), \( K \) is the stock of capital, \( L \) is the amount of unskilled labour and \( A \) is exogenously determined level of technology. It is revealed that change in this exogenous variable, technology, will cause a shift in the production function.

Looking at the neoclassical production function, labour and capital are the major factors that determine increase in output. Hence, this study will introduce other
variables that have influence on the aggregate output of the manufacturing sector in Nigeria. These include; inflation rate, exchange rate, and national savings.

2. Review of Related Literature

Manufacturing sector accelerate productivity and innovation in which the spillover effects spread to other sectors of the economy. In other words, manufacturing sector is a growth-led sector as it leads to increase in economic growth via increasing returns, which is a macroeconomic phenomenon because it resulted from increasing returns to scale. Kaldor’s law as cited in Ududechinyere, Eze, and Nweke, (2018) postulated that increase in the productivity of labour is based on the output of the manufacturing production.

The state of insecurity has discouraged farming in some key food production clusters across the country, particularly in the North-East region where Boko-haram continues to hit hard, and in the South due to the farmer-herdsmen conflict. Employment in industry (% of total employment) (ILO estimate) in Nigeria was 14.70 as of 2017. Its highest value over the past 26 years was 15.30 in 2014, while its lowest value was 8.50 in 2007 (ILO, 2017).

The total supply of available savings is simply the sum of domestic savings and foreign savings. However, domestic savings could be further broken into two components, which include government or public sector savings and private domestic savings. Amongst other things, savings serve as the main source of financing investment and related economic activities. Igbatayo & Agbada (2012) noted that higher level of national savings leads to higher investment and consequently higher output. This is so because the level of savings determines the magnitude of capital accumulation. On the other hand, the magnitude of total earnings depends on the level of total output, thus output also determines the level of savings (capital accumulation) and investments by households and business. Government savings originate from the surplus budgeting, but very few countries make part of their public sector savings from savings or profit of the government owned enterprises. There are also two aspects of private domestic savings. These include corporate savings and household savings. Again foreign savings also come into two basic forms such as foreign aid, and private foreign savings (Stephen and Obah, 2017).

A number of studies have been conducted so far to study the relationship between savings and economic growth in many developing countries, but most of them are connected to Latin American, sub-Saharan and East Asian countries, though there are relatively minimal study in Nigeria.
The reviewed literature show that there has not been literature relating labour force to the manufacturing sector output, though few of the studies were conducted on the national savings on the manufacturing sector in different methods, none has been able to relate labour force and national savings on the manufacturing sector of Nigeria and this is the gap filled in this research.

3. Methodology

3.1. Model Specification

The Solow growth model is symbolically represented as:

\[ Q = (K, L) \]  

Where \( Q \) is the national output, \( K \) represents capital resources employed and \( L \) for unit of labour employed in the production process. Since the focus of this paper is based on the influence of national savings, exchange rate and inflation, therefore national savings, exchange rate and inflation are factors that explain growth for this study. The output (growth) model specified for the purpose of this study considered a sub-sector of the Real Gross Domestic Product, Manufacturing sector is presented thus:

\[ RMGDP_t = (LF_t, ANS_t, EXC_t, INF_t) \]  

Where: \( RMGDP_t \) = Real Manufacturing- GDP at time \( t \), \( ANS_t \) = Adjusted Net Savings at time \( t \), \( EXC_t \) = Exchange Rate at time \( t \), \( INF_t \) = Inflation Rate at time \( t \),

**Vector Error Correction Model**

\[ ECT_{t-1} = [Y_{t-1-\mu}X_{t-1} - E_mR_{t-1}], \]  

Where:
\( Y_{t-1} \) = Dependent variable; \( X_{t-1}, R_{t-1}, \ldots \) \( N_{t-1} \) are the Dependent variables

**LONG-RUN COINTEGRATION MODEL**

\[ ECT_{t-1} = LMGDP_{t-1} - LANS_{t-1} - LF_{t-1} - EXC_{t-1} - INF_{t-1} \]  

Where:
\( LMGDP \): Log of Manufacturing sector in GDP
\( LANS \): Log of Adjusted National Savings
\( LFIND \): Labour Force (in rate)
\( EXC \): Exchange Rate
\( INF \): Inflation Rate
SHORT-RUN COINTEGRATION MODEL

\[ \Delta Y_t = \sigma + \sum_{j=1}^{k-1} \Delta Y_{t-j} + \sum_{j=1}^{k-1} \eta_j \Delta X_{t-j} + \sum_{m=1}^{k-1} \Delta R_{t-m} + \lambda ECT_{t-1} + U_t \]  

(6)

3.2. Data Sources and Measurements

The study used time series data for manufacturing sector contribution to the real GDP, national savings, exchange rate and inflation in Nigeria from 1985 to 2018. The data were obtained from the CBN statistical bulletin various issues up until 2017, National Bureau of Statistics (NBS) 2018 Statistical Bulletin and WDI (2019)

3.3. Estimation Technique

The first phase consists of pre-estimation evaluation, These are the preliminary evaluation of the data using the descriptive statistics method in order to help show, describe and summarize the data in a meaningful way and also to know if the data are normally distributed through their various averages and Jarque-Bera values (Gujarati & Dawn, 2009) cited in (Oseni and Adekunle, 2017).

The second step is the determination of the stability of the variables. For the purpose of this research Augmented Dickey-fuller (ADF) unit root tests was deployed. This test of the time series data is required because a non-stationary regressor invalidates many standard empirical results. The presence of a stochastic trend is determined by testing the presence of unit roots in time series data. (Oseni and Adekunle, 2017).

The next was the Autoregressive Distributive Lag analysis which was based on the order of integration of the variable series

The third phase is the post estimation. In order to confirm the robustness and validity of regression model, a post-estimation test was conducted, which was ARDL Bound Test to test for the existence of a long run relationship among the variables.

4. Empirical Result

4.1. Descriptive Statistic, Normality Test and Correlation Matrix

Table 1

Descriptive Statistics of the Data

<table>
<thead>
<tr>
<th></th>
<th>MGDP</th>
<th>LF</th>
<th>EXC</th>
<th>INF</th>
<th>ANS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>2872.585</td>
<td>9.888765</td>
<td>95.60118</td>
<td>19.48382</td>
<td>16.17819</td>
</tr>
<tr>
<td>Median</td>
<td>1821.575</td>
<td>11.75400</td>
<td>94.42500</td>
<td>12.44000</td>
<td>16.49164</td>
</tr>
<tr>
<td>Maximum</td>
<td>6684.220</td>
<td>12.09300</td>
<td>306.4000</td>
<td>70.97000</td>
<td>43.92243</td>
</tr>
<tr>
<td>Minimum</td>
<td>1373.660</td>
<td>1.000000</td>
<td>0.740000</td>
<td>0.270000</td>
<td>0.079473</td>
</tr>
</tbody>
</table>
Table 1 shows that the mean and median of all the variables lie within the maximum and minimum values. This indicates that the data are normally distributed. The variables manufacturing sector Gross Domestic Product (MGDP), Exchange rate (EXC), inflation (INF) and Adjusted Net Savings (ANS) are positively skewed, while Labour Force (LF) is negatively skewed. The Jarque-Bera statistics shows that the series, MGDP, LF, and INF are normally distributed since the p-values of the series are individually statistically significant at 5% level, while EXC is significant at 10%, ANS is not significant.

Table 2

Correlation Matrix of the Data Set

<table>
<thead>
<tr>
<th>Correlation</th>
<th>LMGDP</th>
<th>LF</th>
<th>LANS</th>
<th>INF</th>
<th>EXC</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMGDP</td>
<td>1.000000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LF</td>
<td>0.378115</td>
<td>1.000000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LANS</td>
<td>-0.439261</td>
<td>0.431548</td>
<td>1.000000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INF</td>
<td>-0.326549</td>
<td>-0.044117</td>
<td>0.118965</td>
<td>1.000000</td>
<td></td>
</tr>
<tr>
<td>EXC</td>
<td>0.872636</td>
<td>0.324256</td>
<td>-0.438033</td>
<td>-0.507486</td>
<td>1.000000</td>
</tr>
</tbody>
</table>


Correlation among the variables was estimated to detect whether the variables have high multicollinearity among themselves. Multicollinearity among variables only occur when the result of the correlation coefficient is above 0.95 (Iyoha, 2004). The results of the correlation analysis of Table 2 shows that the correlation coefficients among the variables, LMGDP, LF, LANS, INF, and EXC are below 0.95 which shows that there is no trace of multicollinearity among the independent variables.

Time Series Properties of the Variables
The study employed Augmented Dickey-Fuller to ascertain the order of integration of the variables. It was observed that all the variables are not stationary at level, but are stationary at first difference I(1). This satisfies the condition for applying Johansen procedure.

The next step is to choose the appropriate lag order. We have to bear in mind that our sample is quite small and a lag too big is not good, because it could restrain the degrees of freedom. We verify the existence and number of cointegrating relationship, by using trace test and max-eigenvalue test. By applying „lag length criteria” in Evies we get the following results:

**Table 4

VAR Lag Order Selection Criteria**

Endogenous variables: MGDP LFIND EXC INF ANS
Exogenous variables: C
Sample: 1985 2018
Included observations: 32

<table>
<thead>
<tr>
<th>Lag</th>
<th>LogL</th>
<th>LR</th>
<th>FPE</th>
<th>AIC</th>
<th>SC</th>
<th>HQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-779.7421</td>
<td>NA</td>
<td>1.37e+15</td>
<td>49.04638</td>
<td>49.27540</td>
<td>49.12230</td>
</tr>
<tr>
<td>1</td>
<td>-636.8583</td>
<td>232.1861</td>
<td>8.88e+11</td>
<td>41.67865</td>
<td>43.05277*</td>
<td>42.13413</td>
</tr>
<tr>
<td>2</td>
<td>-600.3919</td>
<td>47.86221*</td>
<td>4.90e+11*</td>
<td>40.96199*</td>
<td>43.48123</td>
<td>41.79705*</td>
</tr>
</tbody>
</table>

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion
Various criteria diverge as to the lag order of the model. The researcher faces the challenge of a choice. In order to preserve the quality of our model and for consistency, since the Akaike information criterion (AIC) was used for the ADF, lag 2 for the initial VAR, model and this implies that lag 1 was used for the final VEC model. A second pre-condition for fitting a VEC model is that our series be cointegrated, at the chosen lag order. We verify the existence and number of cointegration relationship, by using trace test and max-eigenvalue test for the initial VAR model.

Table 5

<table>
<thead>
<tr>
<th>Hypothesized No. of CE(s)</th>
<th>Eigenvalue</th>
<th>Trace Statistic</th>
<th>0.05 Critical Value</th>
<th>Prob.**</th>
<th>Max-Eigen Statistic</th>
<th>0.05 Critical Value</th>
<th>Prob.**</th>
</tr>
</thead>
<tbody>
<tr>
<td>None *</td>
<td>0.824031</td>
<td>107.3141</td>
<td>69.81889</td>
<td>0.0000</td>
<td>53.86081</td>
<td>33.87687</td>
<td>0.0001</td>
</tr>
<tr>
<td>At most 1 *</td>
<td>0.522633</td>
<td>53.45329</td>
<td>47.85613</td>
<td>0.0136</td>
<td>22.92353</td>
<td>27.58434</td>
<td>0.1768</td>
</tr>
<tr>
<td>At most 2 *</td>
<td>0.405244</td>
<td>30.52976</td>
<td>29.79707</td>
<td>0.0411</td>
<td>16.10772</td>
<td>21.13162</td>
<td>0.2186</td>
</tr>
<tr>
<td>At most 3</td>
<td>0.369741</td>
<td>14.42203</td>
<td>15.49471</td>
<td>0.0721</td>
<td>14.31037</td>
<td>14.26460</td>
<td>0.0492</td>
</tr>
<tr>
<td>At most 4</td>
<td>0.003596</td>
<td>0.111663</td>
<td>3.841466</td>
<td>0.7383</td>
<td>0.111663</td>
<td>3.841466</td>
<td>0.7383</td>
</tr>
</tbody>
</table>

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values
Unrestricted Cointegration Rank Test (Maximum Eigenvalue).

Table 5 revealed that trace statistics has three integrating equations, while max-Eigen statistic suggest only one co-integrating equations at 5% level of significance.
**Estimating and validating Vector Error Correction (VEC)**

At this stage, we estimate our VEC model. We compute the vector error correction model with two lags, two CEs, no restriction imposed on coefficients and with intercept (no trend) in CEs and VAR. The results are as shown in table a

Vector Error Correction Estimates

Sample (adjusted): 1987-2018

Included observations: 32 after adjustments

Standard errors in ( ) & t-statistics in [ ]

<table>
<thead>
<tr>
<th>Cointegrating Eq:</th>
<th>CointEq1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMGDP(-1)</td>
<td>1.000000</td>
</tr>
<tr>
<td>LANS(-1)</td>
<td>0.056173 (0.07301) [-0.75895]</td>
</tr>
<tr>
<td>INF(-1)</td>
<td>-0.017148 (0.00404) [-4.24398]</td>
</tr>
<tr>
<td>EXC(-1)</td>
<td>-0.008549 (0.00164) [-5.21701]</td>
</tr>
<tr>
<td>LF(-1)</td>
<td>0.051430 (0.02545) [2.02107]</td>
</tr>
<tr>
<td>C</td>
<td>-7.070015</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Error Correction:</th>
<th>D(LMGDP)</th>
<th>D(LANS)</th>
<th>D(INF)</th>
<th>D(EXC)</th>
<th>D(LFIND)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CointEq1</td>
<td>-0.019978 (0.03733) [-0.53515]</td>
<td>-0.968877 (0.74973) [-1.29230]</td>
<td>19.22467 (8.91553) [2.15631]</td>
<td>34.62368 (8.16841) [4.23873]</td>
<td>-0.590054 [-0.58241]</td>
</tr>
<tr>
<td>D(LMGDP(-1))</td>
<td>0.567820 (0.17115) [3.31760]</td>
<td>1.373079 (3.43735) [0.39946]</td>
<td>-36.86500 (40.8759) [-0.90188]</td>
<td>-112.1722 (37.4505) [-2.99522]</td>
<td>1.084732 [0.23353]</td>
</tr>
<tr>
<td>D(LANS(-1))</td>
<td>-0.005658 (0.00824) [-0.68635]</td>
<td>-0.620496 (0.16557) [-3.74771]</td>
<td>1.274787 (1.96887) [0.64747]</td>
<td>1.473141 (1.80388) [0.81665]</td>
<td>0.484615 [2.16601]</td>
</tr>
</tbody>
</table>
Table 6 revealed that INF\(_t\) and EXC\(_t\) have a long-run negative effect on the MGDP while ANS\(_t\) and LF have long-run positive effect on the MGDP. This implies that 1% change in the ANS, INF and EXC respectively will bring about a 56.2%, 1.7% and 0.9% decrease on the MGDP at the long-run, all things been equal.

**SHORT-RUN COINTEGRATION MODEL**

\[
\Delta Y_t = \sigma + \sum_{j=1}^{k-1} \Delta Y_{t-1} + \sum_{j=1}^{k-1} \eta j \Delta X_{t-j} + \sum_{m=1}^{k-1} \Delta R_{t-m} + \lambda ECT_{t-1} + U_t
\]

\[
\Delta LMGDP_{t-1} = -0.019978 ECT_{t-1} + 0.567820 LMGDP_{t-1} - 0.005658 ANS_{t-1} - 0.000970 INF_{t-1} - 0.000524 EXC_{t-1} - 0.008269 LF_{t-1} + 0.028390
\]

The result shows that the previous year deviation from the long-run equilibrium is corrected at adjustment speed of 2% annually. A percentage change in the ANS is associated with a 0.0057 decrease in the MGDP on the average in the short-run, all things been equal. It could also be revealed that 1% change in the INF will bring about a 0.000970 decrease in the MGDP in the short-run.
**Table 7**

**VEC Residual Serial Correlation LM Tests**

Null Hypothesis: no serial correlation at lag order $h$
Sample: 1985 2018
Included observations: 32

<table>
<thead>
<tr>
<th>Lags</th>
<th>LM-Stat</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>30.86902</td>
<td>0.1934</td>
</tr>
<tr>
<td>2</td>
<td>41.41095</td>
<td>0.0208</td>
</tr>
</tbody>
</table>

Probs. from chi-square with 25 df.

The result shows that the errors are not serially correlated. From Table 7, the p-value is greater than the chosen level of significance of 5%, indicating the absence of serial autocorrelation in the model.

**Table 8**

**Granger Causality Tests**
Pairwise Granger Causality Tests
Sample: 1985 2018
Lags: 2

<table>
<thead>
<tr>
<th>Null Hypothesis:</th>
<th>Obs</th>
<th>F-Statistic</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>LF does not Granger Cause LMGDP</td>
<td>32</td>
<td>1.64673</td>
<td>0.2114</td>
</tr>
<tr>
<td>LMGDP does not Granger Cause LF</td>
<td></td>
<td>0.13910</td>
<td>0.8708</td>
</tr>
<tr>
<td>LANS does not Granger Cause LMGDP</td>
<td>32</td>
<td>0.06535</td>
<td>0.9369</td>
</tr>
<tr>
<td>LMGDP does not Granger Cause LANS</td>
<td></td>
<td>2.45989</td>
<td>0.1044</td>
</tr>
<tr>
<td>INF does not Granger Cause LMGDP</td>
<td>32</td>
<td>2.24053</td>
<td>0.1258</td>
</tr>
<tr>
<td>LMGDP does not Granger Cause INF</td>
<td></td>
<td>1.25374</td>
<td>0.3015</td>
</tr>
<tr>
<td>EXC does not Granger Cause LMGDP</td>
<td>32</td>
<td>4.28685</td>
<td>0.0242</td>
</tr>
<tr>
<td>LMGDP does not Granger Cause EXC</td>
<td></td>
<td>5.66139</td>
<td>0.0088</td>
</tr>
<tr>
<td>LANS does not Granger Cause LF</td>
<td>32</td>
<td>3.98059</td>
<td>0.0305</td>
</tr>
<tr>
<td>LF does not Granger Cause LANS</td>
<td></td>
<td>1.38724</td>
<td>0.2670</td>
</tr>
<tr>
<td>INF does not Granger Cause LF</td>
<td>32</td>
<td>5.86136</td>
<td>0.0077</td>
</tr>
<tr>
<td>LF does not Granger Cause INF</td>
<td></td>
<td>2.30110</td>
<td>0.1195</td>
</tr>
<tr>
<td>EXC does not Granger Cause LF</td>
<td>32</td>
<td>0.92196</td>
<td>0.4099</td>
</tr>
<tr>
<td>LF does not Granger Cause EXC</td>
<td></td>
<td>0.58075</td>
<td>0.5663</td>
</tr>
<tr>
<td>INF does not Granger Cause LANS</td>
<td>32</td>
<td>3.28828</td>
<td>0.0527</td>
</tr>
<tr>
<td>LANS does not Granger Cause INF</td>
<td></td>
<td>0.56233</td>
<td>0.5764</td>
</tr>
</tbody>
</table>
From the granger causality test in table 8, it was revealed that there is no causal relationship between LF and the MGDP, no causal relationship between ANS and MGDP, no causal relationship between INF and MGDP, however, there is a bi-directional relationship between EXC and MGDP since the P-value is less than 0.05, by implication the null hypothesis is rejected, there is no causality.

5. Conclusion and Recommendations

This study confirmed the effect of industrial sector labour force, and national income savings manufacturing sector output in Nigeria. It was discovered that the variables are cointegrated using Johanson cointegration test, hence Vector Error Correction Model was employed. The long run cointegration model shows that national savings have a long run positive effect on the manufacturing sector output, this finding is in line with the findings of Tang & Chau (2009), that savings and economic growth are co-integrated and positively related in the long-run, likewise Lean & Song (2009), Stephen, & Obah (2017), also revealed that labour force in the industrial sector has a long-run effect on the manufacturing sector output, while inflation and exchange rate have a long-run negative effect on the manufacturing sector output. This is in agreement with the findings of Ojeyinka and Adegboye (2017). The model identified a speed of adjustment by 2% of disequilibrium correction yearly for reaching long run equilibrium steady state position. It could be deduced from this study that national savings, labour force in the industrial sector, inflation and exchange rate are very critical factors that determine the growth and survival of the manufacturing sector. Based on these empirical findings, it is therefore very important that the government look critically to the manufacturing sector and revamp the sector by making credit facility to the sector, and increase the use of domestic raw materials. The multiplier effect of this is reduction in the level of unemployment, increase per capita income and subsequently encourage savings.

References


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