Impact of Corporate Diversification on Sustainability of Listed Health Care Firms in Nigeria

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Authors’ contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

This study was carried out on impact of corporate diversification on the sustainability of healthcare companies in Nigeria. To determine the relationship between corporate diversification and organizational sustainability, corporate diversification was measured using geographic diversification (GEODIV), operational diversification (OPDIV), and product diversification (PRODIV), while sustainability, on the other hand, was measured using Kinder Lydenberg Domini (KLD) rating system on social-environmental performance. Ex post facto design was used and the data were collected from the annual reports and accounts of the listed healthcare companies in Nigeria for the period up to 2016-2020. The OLS model was used in the data analysis and the results of the study show that geographic diversification, operational diversification & product diversification have positive and a significant effect on corporate sustainability at a significant level of 1%. Therefore, the study concluded that corporate diversification ensures organizational sustainability in Nigeria. Hence, the study recommended that business organizations should engage in diversification (GEODIV, OPDIV & PRODIV) as this ensures organizational sustainability. Hence, proper management of diversification decisions is required, as over-diversification could lead to a deterioration in the company's financial performance.

Keywords: Geographical diversification; operational diversification; product diversification; sustainability.

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1. INTRODUCTION

The study of business diversification has long attracted the attention of strategic management scholars and is one of the most widely researched business fields, especially in the developed world [1,2].

Diversification strategy is a crucial part of a company's strategic management, and the relationship which exists between economic performance and company's diversification strategy is a topic of significant interest to managers and academics [3]. Despite the fact that attempts to demonstrate the impact of diversification on company performance are not conclusive due to the conflicting evidence of such studies, most of the research conducted to date is based on the experience of companies in developed countries. The effect of diversification on firm performance in other institutional settings, particularly in the less developed economies, hasn't attracted much attention. Hence, it limits the generalizability of the results and the development of a global diversification theory.

The extent to which companies in the less developed countries use the diversification option, the type of diversification strategy they pursue and the extent to which such diversification measures ensures companies' financial performance and growth have not yet been comprehensively studied. With specific attention to Nigeria, many companies operating in different sectors of the economy sought to diversify their product market portfolios in order to spread their companies’ risks, ensure performance, and deal with the difficulties and challenges of competitive transition and deregulated economy [4]. The resultant effect of such diversification actions are yet to be tested empirically, particularly in the healthcare sector of the Nigerian Exchange Group (NGX), where no specific study had focused on looking at the relationship that exists between business diversification and organizational sustainability.

Existing literature on firm diversification focuses mostly on developed markets [5,1,2] and to a lesser extent on developing markets [6,7,8]. Also, studies that have looked at the issue of diversification and financial performance in Nigeria are considered to be very limited and none has focused on diversification and sustainability, specifically the healthcare sector of the Nigerian Exchange Group (NGX). Hence the need for the study to examine the impact of corporate diversification on the sustainability of healthcare businesses in Nigeria.

To achieve this purpose, the following hypotheses were formulated:

- **H₀₁**: Geographical Diversification has not significant impact on Sustainability of Health Care Firms in Nigeria.
- **H₀₂**: Operational Diversification has no significant impact on Sustainability of Health Care Firms in Nigeria.
- **H₀₃**: Product Diversification has no significant impact on Sustainability of Health Care Firms in Nigeria.

2. REVIEW OF RELATED LITERATURE

2.1 Corporate Diversification

Ozigbo and Daniel [9] conceded that diversification is not an easy strategy as it involves decisions about the type and level of diversification. Diversification refers to a business strategy to enter and compete in new product markets. Diversification enables companies to maximize value by expanding the scope of the markets and sector in which they compete and delivering product offerings to newer customers (Purkayastha, Manolova, & Edelman, 2012).

According to Ravichandran and Bhaduri [10], business diversification is decomposed into three categories viz; concentric diversification, where a business segment invests into an industry that is technologically similar to the industry it is currently in, horizontal diversification, where the unit manufactures new products that are still attractive to its current customers, and conglomerate diversification through Mergers and acquisitions in which the unit operates in order to attract new customers and thereby improving corporate performance.

2.1.1 Geographical diversification

According to Chia-Wen and Heng-Yin [11], geographic diversification is seen as an essential means of growth and improved performance. It is also used to get hold the supply of intermediate products by internalizing these functions, thereby avoiding unexpected fluctuations in these markets that are peculiar in the developing countries.
2.1.2 Operational diversification

Operational diversification strategies are used to maximize the company's operations by supplementing markets, products, services, or stages of production to the existing business. The essence of operational diversification is to give the firm the opportunity to enter lines of business that differ from usual operations [12].

2.1.3 Product diversification

Product diversification is a means of spreading out the original market for a product. This strategy has helped in increasing sales of an existing product line, which is particularly useful for a company experiencing flat or declining sales [13]. It is also seen as a company's strategy to increase profitability and generate higher sales volume with new products.

2.2 Organizational Sustainability (OS)

Omaliko, Okeke, and Obiora [14] assert that OS has the leadership, global insight, talent, and shift in strategy needed to address the unique challenges faced by corporate organizations. Organizational standpoint of sustainability lies in its ability to conspicuously manage its responsibilities for environmental protection, social wellbeing and economic shared values on the long run, while being held responsible by its stakeholders [15].

Omaliko and Onyeogubalu [16] noted that for organizations to be sustainable, the following shall be conceded:

i. transparency in their decisions and activities that affect their responsibilities
ii. accountability for their environmental, social and economic impacts
iii. behaving ethically
iv. Respect, consider and respond to the interests of its stakeholders
v. Accepting that respect for the rule of law is mandatory

Organizational sustainability as a concept requires organizations to have specific programs in line with a clearly defined social [17].

2.3 Theoretical Framework

The theoretical framework that indicates the meaning of a word in relation to the firm diversification and sustainability established in this study is Modern Portfolio Theory (MPT). The acceptance and knowledge of this theory determines the base for the study.

2.3.1 Modern Portfolio Theory (MPT)

Modern Portfolio Theory (MPT) was proposed by Harry Markowitz in a 1959 paper on portfolio selection. From then, it has gotten a wide recognition in finance. MPT encourages this through careful selection of investments to include in a portfolio; an investor can effectively minimize risk while maximizing the expected return of the portfolio. According to Markowitz, the risk of a portfolio is the portfolio's covariance, and every investor should aim to build a portfolio of low-covariance investments. Various researchers have examined the relationship between financial performance and diversification [18,19,20] and their theoretical basis and reference was Modern Portfolio Theory.

![Diagram of Conceptual Framework]

**Fig. 1. The Diagram of Conceptual Framework**

*Source: Author's Concept (2022)*
Sharpe expanded the concept in the MPT in 1963, formulating the factor model used to determine how a security performs relative to the general market index. Ross also instituted an asset pricing model in 1976 that has gotten wide application in valuing assets when considering multiple risks [21]. Scholars like Chen and Yu [22]; Olajide [20] reported that diversification leads to exploitation of economies of scale and will only be successful if the marginal benefits of diversification are greater than the marginal costs and values that can result from diversification including increase in profits, stability of income streams, sales growth, sustainability and improving performance of the company's shares in the market. However, the theory assumes that investments in different portfolios ensure corporate sustainability. MPT therefore underpinned a solid basis for considering the impact of corporate diversification on the sustainability of healthcare companies in Nigeria.

2.4 Empirical Review

Chia-Wen and Heng-Yih [11] used longitudinal data and regression models for data analysis in their study on firm diversification and firm performance. The study found that product diversity and customer diversity are positively related with company performance, while geographic diversity is negatively related with company performance.

Ozigbo and Daniel's [9] study of financial performance and diversification strategy of Nigerian private companies used regression model and found that diversified companies have higher performance during the global financial crisis. The level of diversification was positively related to performance, i.e. more diversified companies fared better. In addition, the study found that private companies that are wholly owned by the founder and his family fare worse in a crisis.

Oyedijo [4] examined the relationship between financial performance and diversification using the statistical testing tool ANOVA. The study found that the financial performance and revenue growth of companies in Nigeria are significantly affected by the type of diversification.

Patrick [23] examined the relationship between the performance of manufacturing firms and product diversification in Nigeria. The study used secondary data analyzed using panel regression analysis. The results showed that the size of manufacturing companies determines the diversification of their products.

Aguiar, Poornima and Reddy [24] in a study examining the link between profitability and product diversification in fast-moving consumer goods companies listed on the Indian Stock Exchange between 2005 and 2015. The diversification index was derived using Gini-Simpson entropy, the results of which showed that there were large differences between the companies studied, but no large fluctuations within the companies over the years. The index revealed that the fifteen companies considered three broad categories i.e high, medium and low. Those with an index score of 0.60 and above are classified as high, those ranging from 0.30 to 0.59 as medium, and those below 0.30 as low.


Ishak and Napier (2006) investigated the relationship between corporate diversification and ownership structures of listed companies in Malaysia. The study reported that 50 percent of the analyzed companies were diversified. Also, the result of the study has no evidence that diversified companies are valued different in Malaysia than the sampled companies.

Chakrabarti, Singh, and Mahmood [26] evaluated the impact of corporate diversification on the performance of firms. The study found that diversification negatively impacts performance in the developed institutional settings; although there is an improvement in performance in less developed environments.

Phung and Mishra [27] studied the impact of corporate diversification on the performance of companies listed on the Vietnam Stock Exchange for the period 2007-2012. The analysis was performed using Fixed Effect, Instrumental Fixed Effect, Heckman selection model and system generalized method of moments. The study found that corporate diversification has a negative impact on corporate performance.

Iqbal, Hameed and Qadeer [28] on the impact of diversification on firm performance in Pakistan explored the use of regression model using
secondary data. The findings showed a negative correlation between company performance and diversification. Nwakoby and Ihediwa (2018) evaluated the impact of diversification on the financial performance of selected companies in Nigeria for the period 2008-2017. Using the regression model, the study found that firm performance is affected by its product.

Mashiri and Sebele [29] studied diversification and its impact on performance of conglomerates in the food and beverage sector in Zimbabwe. Using regression model, diversification and performance were found to be linearly and positively related.

3. METHODOLOGY

Ex post facto design was used as the data is secondary in nature which the researcher lacks control over. The study population consists of all 10 companies listed in the healthcare sector of the Nigerian Exchange Group (NGX) for the period 2016-2020 (NGX Business List, 2022). The use of quoted healthcare companies on NGX could be justified by the fact that, to our knowledge, no study is known to have focused on diversification in relation to the healthcare sector of NGX. On this basis, 10 companies formed our sample size with 50 observations. Data were taken from the annual accounts and annual accounts of the sampled companies. The OLS model was used to study the impact of corporate diversification (GEODIV, OPDIV & PRODIV) on firms' sustainability measured using Kinder Lydenberg Domini (KLD) rating system on social-environmental performance.

The collected data were analyzed using STATA 15. The variance inflation factor (VIF) was examined to determine whether there is multicollinearity of the regressors.

3.1 Operationalization and Measurement of Variables

3.1.1 Dependent variable

The organizational sustainability is the dependent variable for the study and was measured using the Kinder Lydenberg Domini rating system on social-environmental performance and the content analysis method of data collection as used by Uwuigbe [30], Omaliko and Okpala [31], Omaliko, Nwadiolor and Nweze [32]. For this purpose, a score of (1) was given if an item was shown in the annual reports; otherwise a score of (0) was given (See Appendix 1). Therefore, a company could score a maximum of 20 points and a minimum of 0 points. The formula for determining the report scores using the 20 attributes (See Appendix 1) is shown below as thus:

\[
RS = \sum_{i=1}^{20} di
\]

\[
RS = \text{Report Scores}
\]

\[
d_i = 1 \text{ if the item is shown and 0 if the item is not shown}
\]

\[
i = 1, 2, 3, 4, 5... 20.
\]

3.1.2 Independent variable

Independent variable was captured using Geographical Diversification (GEODIV), Operational Diversification (OPDIV) and Product Diversification (PRODIV) as shown on Table 1:

<table>
<thead>
<tr>
<th>Variables</th>
<th>Measurements</th>
<th>A priori Expectation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geographical Diversification</td>
<td>1 if the firm has dominant foreign interest (51% and above) or 0 for firm with dominant local interest</td>
<td>Ugwuanyi and Ugwu [33]</td>
</tr>
<tr>
<td>Operational Diversification</td>
<td>1 if the firm has subsidiaries or group accounts otherwise 0 if the firm has no subsidiary and thus has only the “firm” annual reports and accounts</td>
<td>Ugwuanyi and Ugwu [33]</td>
</tr>
<tr>
<td>Product Diversification</td>
<td>1 if the firm has a multiple products and 0 if otherwise</td>
<td>Chia-Wen and Heng-Yih [11]</td>
</tr>
</tbody>
</table>

Source: Empirical Survey (2022)
3.2 Model Specification and Justification

The present study adapted and also modified the model of Nwakobi and Ihediwa [13] in examining the impact of corporate diversification on organizational sustainability as shown below;

Nwakobi and Ihediwa [13]: \[ \text{ROE}_{it} = \beta_0 + \beta_1\text{PRODIV}_{it} + \varepsilon_{it} \]

\[ \text{ROE}_{it} = \beta_0 + \beta_2\text{BUSDIV}_{it} + \varepsilon_{it} \]

The model modified for the study is shown below as:

\[ SS_t = \beta_0 + \beta_1\text{GEODIV}_t + \beta_2\text{OPDIV}_t + \beta_3\text{PRODIV}_t + \mu \]

\[ \lambda :::: \]

ROE = Return on Equity
PRODIV = Product Diversification
BUSDIV = Business Diversification
SS = Sustainability
GEODIV = Geographical Diversification
OPDIV = Operational Diversification
\( \mu \) = error term

4. DATA ANALYSIS AND RESULTS

From the Table 2, it was observed that on the average, in a 5-year period (2016-2020), the listed health care firms in Nigeria were characterized by positive sustainability (SS) value of 2.36825. This indicates that the entire health care companies in Nigeria have positive sustainability value with a standard deviation value of 1.276409. The average geographical diversification (GEODIV) for the sampled firms was .600 and standard deviation value of .4961389. This means that firms with GEODIV values of .600 and above are sustainable. High variation was found in minimum and maximum values of GEODIV which stood at 0 and 1 respectively. The wide variation in GEODIV values for the sampled firms justifies the relevance of the study as the researcher assumes that firms with higher GEODIV values are more sustainable than those firms with low GEODIV values.

Operational Diversification (OPDIV) on the other hand was characterized by a mean value of .475 and standard deviation value of .5057363. This means that firms with OPDIV values of .475 or more are sustainable. Also, high variation was found in minimum and maximum values of OPDIV which stood at 0 and 1 respectively. The wide variation in OPDIV values for the sampled firms justifies the relevance for this study as the researcher assumes that firms with higher OPDIV values are more sustainable than those firms with low OPDIV values.

Similarly, product diversification (PRODIV) was characterized by a mean value of 4.25 and standard deviation value of 2.109198. This means that firms with PRODIV values of 4.25 and above are sustainable. Also, high variation was found in minimum and maximum values of PRODIV which stood at 0 and 1 respectively. The wide variation in PRODIV values for the sampled firms justifies the relevance for this study as the researcher assumes that firms with higher PRODIV values are more sustainable than firms with low PRODIV values.

<table>
<thead>
<tr>
<th>Variable</th>
<th>VIF</th>
<th>1/VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRODIV</td>
<td>1.15</td>
<td>0.869714</td>
</tr>
<tr>
<td>OPDIV</td>
<td>1.12</td>
<td>0.892707</td>
</tr>
<tr>
<td>GEODIV</td>
<td>1.05</td>
<td>0.956268</td>
</tr>
</tbody>
</table>

Mean VIF | 1.11
Table 3, gives a tolerance values ranging from 0.869714 to 0.956268. this implies non multi-collinearity existence. The variance inflation factor which is an inverse of tolerance value also range from 1.05 to 1.15 which also indicates non multi collinearity existence.

4.2 Test of Hypothesis

Table 4. Result on impact of corporate diversification on sustainability of health care firms in Nigeria

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>DF</th>
<th>MS</th>
<th>Number of OBS = 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODEL</td>
<td>65.2268395</td>
<td>3</td>
<td>21.7422798</td>
<td>F(3, 46) = 81.228</td>
</tr>
<tr>
<td>RESIDUAL</td>
<td>12.3127381</td>
<td>46</td>
<td>2.67668219</td>
<td>Prob &gt; F = 0.0030</td>
</tr>
<tr>
<td>Total</td>
<td>77.5395776</td>
<td>49</td>
<td>1.58244035</td>
<td>R-squared = 0.6177</td>
</tr>
</tbody>
</table>

**SS** | **Coeff** | **Std. Err** | **t** | **P>|t|** | **95% Conf. Interval** |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GEODIV</td>
<td>.3405026</td>
<td>.0342220</td>
<td>9.94</td>
<td>0.000</td>
<td>.5401404</td>
</tr>
<tr>
<td>OPDIV</td>
<td>.0918442</td>
<td>.4408859</td>
<td>0.21</td>
<td>0.000</td>
<td>.8023139</td>
</tr>
<tr>
<td>PRODIV</td>
<td>.2388473</td>
<td>.0171024</td>
<td>13.9</td>
<td>0.001</td>
<td>.2260610</td>
</tr>
<tr>
<td>Cons</td>
<td>2.157923</td>
<td>.6024119</td>
<td>3.58</td>
<td>0.002</td>
<td>.9361755</td>
</tr>
</tbody>
</table>

Source: Result output from STATA 15

5. DISCUSSION OF FINDINGS

The result of the study using the OLS model is shown below as:

Geographical Diversification (GEODIV) and Sustainability (SS) of Health Care Firms in Nigeria

Considering the result above, the study indicates that there is a positive and significant correlation between geographic diversification and the sustainability of publicly traded healthcare companies in Nigeria. The p-value of 0.000 as shown above implies that the test at 1% level is considered statistically significant. This could be proven with the correlation coefficient of 34%, that geographic diversification ensures corporate sustainability by 34%. Thus, we accepted the alternate hypothesis stating that geographic diversification has a significant impact on the sustainability of healthcare firms in Nigeria.

This is in line with the a priori expectations of Ozigbo and Daniel [9], whose study focused on the diversification strategy and financial performance of Nigerian private companies. The study explored the use of the regression model and found a significant and positive relationship between geographic diversification and firm performance. The study therefore concludes that geographic diversification ensures business performance. Similarly, Onyedjio (2012) examined the impact of product-market diversification strategy on financial performance firms in Nigeria. The study found a significant and positive association between company performance and geographic diversification. The result of this study is not consistent with the findings of Chia-Wen and Heng-Yih [11] who examined managerial ownership, diversification and financial performance and using a regression model reported negative association between company performance and geographic diversification.

Operational Diversification (OPDIV) and Sustainability (SS) of Health Care Firms in Nigeria

Given the result above, the study shows that there is a positive and significant correlation between operational diversification and the sustainability of listed healthcare companies in Nigeria. The P-value of 0.000 at the 1% level is considered statistically significant. This was proven with a correlation coefficient of 0.092%, which implies that operational diversification ensures 9.2% of corporate sustainability. Thus, we accepted the alternate hypothesis stating that operational diversification has a significant impact on the sustainability of healthcare businesses in Nigeria. This is consistent with the study by Iqbal, Hameed and Qadeer [28] on the impact of diversification on fixed benefit. Using the regression model, the study reported that operational diversification was linearly but positively related to firm performance. Also, Mashiri and Sebele [29] examined the diversification strategy and its impact on financial
performance in Zimbabwe using the regression model, the study found that operational diversification was linearly but positively related to firm performance.

Product Diversification (PRODIV) and Sustainability (SS) of Health Care Firms in Nigeria

Considering the result above, the study indicates that there is a positive and significant correlation between product diversification and the sustainability of listed healthcare companies in Nigeria. The P-value of 0.001 at the 1% level is considered statistically significant. This was proven with a correlation coefficient of 0.239%, that product diversification ensures 23.9% of corporate sustainability. Thus, accepted the alternate hypothesis stating that product diversification has a significant impact on the sustainability of healthcare companies in Nigeria. This agrees with the a priori expectations of Patrick [23], Aguiar, Poornima and Reddy [24], Jatto and Ayuba [25], Nwakoby and Ihediwa (2018), whose studies were conducted in Nigeria, India and Nigeria, respectively.


6. CONCLUSION

The study having developed a model fit on corporate diversification using (GEODIV, OPDIV & PRODIV), concludes as follows;

1. Geographical Diversification has significant impact on Sustainability of Health Care Firms in Nigeria.
2. Operational Diversification significantly ensures Sustainability of Health Care Firms in Nigeria.
3. Product Diversification has significant impact on Sustainability of Health Care Firms in Nigeria.

7. RECOMMENDATION

The stay made the following recommendations:

1. The study established that geographical diversification ensures organizational sustainability, thus; it was recommended that corporate organization should engage on geographical diversification in order to avoid business stagnation and declining sales.
2. The study also recommended operational diversification for corporate organizations since operational diversification ensures corporate sustainability. Also, our results recommend that operational diversification ensures firm performance. Hence, proper management of diversification decisions is required, as over-diversification could lead to a deterioration in the company's financial performance.
3. The study found positive and significant relationship between corporate sustainability and product diversification. Thus, product diversification was recommended for corporate organizations as it ensures organizational sustainability.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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## Appendix 1

### Table 5. Twenty testable social-environmental performance items

<table>
<thead>
<tr>
<th>S/N</th>
<th>Environmental</th>
<th>Energy</th>
<th>Research &amp; Development</th>
<th>Employee Health and Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Environmental Pollution</td>
<td>Firms Energy Policies</td>
<td>Investment in Research on Renewal Technology</td>
<td>Disclosing Accident Statistics</td>
</tr>
<tr>
<td>2</td>
<td>Conservation of Natural Resources</td>
<td>Disclosing Energy Savings</td>
<td>Environmental Education</td>
<td>Reducing or eliminating Pollutants, Irritants, or Hazards in the work Environment</td>
</tr>
<tr>
<td>3</td>
<td>Environmental Management/Environmental Policies</td>
<td>Reduction in energy Consumption</td>
<td>Environmental Research</td>
<td>Promoting Employee Safety and Physical or Mental Health</td>
</tr>
<tr>
<td>4</td>
<td>Recycling Plant of Waste Products</td>
<td>Received Awards or Penalties</td>
<td>Waste Management/Reduction and Recycling Technology</td>
<td>Disclosing Benefits from increased Health and safety Expenditure</td>
</tr>
<tr>
<td>5</td>
<td>Air Emission Information</td>
<td>Disclosing increased Energy Efficiency Products</td>
<td>Research on New Methods of Production</td>
<td>Complying with Health and Safety Standards and Regulations and Establishment of Educational Institution</td>
</tr>
</tbody>
</table>

Source: Adapted from (Hackston & Milne, 1996 & Adler, 1999)

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