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Impact of Board Diversity on Voluntary Disclosure of Intellectual Capital: Evidence from Listed Non-Financial Services Firms in Nigeria

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Abstract:

This study aims to examine the impact of board diversity on intellectual capital disclosure of forty-four listed non-financial services firms in Nigeria during the period of ten years from 2011-2020. The study analysed the data by means of descriptive statistics to provide summary statistics for the variables. Similarly, the study adopted Robust ordinary least square (OLS) regressions to test the study hypotheses using STATA software. The regression results revealed that board size has significant positive impact on intellectual capital disclosure. However, the finding of the study revealed that board nationality and board composition have significant negative impact on intellectual capital disclosure. Emphasis should be placed on the numbers and quality of members and their effectiveness in enhancing more intellectual capital disclosure of the firms. To protect the interest of foreign and other investors, there should be increase in the percentage of foreign members on the board of listed non-financial services firms in Nigeria. Additionally, foreign members on the board should ensure that they attend board meeting regularly. Finally, to enhance board independence and effectiveness in monitoring the management, there should be limit to the tenure of non-executive directors and their independence should be protected so as to improve their capacity and capability of monitoring management to disclose more information on intellectual capital voluntarily.

Keywords- Board nationality, board composition, disclosure, human capital, relational capital, structural capital

1. Introduction

The increased recognition of the importance of the knowledge economy in organizations has increased a lot of discussions on how to identify, quantify, and disclose intellectual capital. Intellectual Capital (IC), which complements financial and physical capital, plays a vital role in the value creation process of businesses in knowledge-based economies. Many 21st century businesses' performance is believed to be dependent on their ability to unlock and leverage their intellectual capital in order to achieve maximum organizational advantage (Nahapiet & Ghoshal, 1998; Keenan & Aggestam, 2001). Keenan *et al* (2001) were one of the first authors to identify conceptual linkages between corporate governance and intellectual capital. The authors stated that decision makers in charge of an organization's corporate governance have a fiduciary responsibility to fully exploit intellectual capital, as well as financial and physical capital.

IC (human capital, structural capital and relational capital) is a significant value producer and a critical component in increasing a company's competitiveness. Firms are encouraged to provide annual IC statements in order to provide a clearer image of the company's IC base, its activities that use IC to create value, and the output of those activities to various stakeholders. The quantity of information that companies reveal about their IC is referred to as Intellectual Capital Disclosure (ICD). It can also be defined as a technique for reporting the nature of non-measurable (intangible) values in an organization. Board diversity refers to the composition of the board of directors and directors, as well as the combination of qualities, characteristics, and diverse talents of individual members of the board. The composition of the board of directors as an organ of a corporation tasked with applying corporate governance principles and enhancing creditor protection is one mechanism of corporate governance. The existence of a board of directors and directors is viewed as an internal control mechanism that allows management to maximize shareholder value by controlling selfish behaviour of the management. Board diversity is an important control tool for monitoring management choices and ensuring that a company operates efficiently for its stakeholders.

Empirical evidence in Nigeria in relation to the conceptual link between board diversity and intellectual capital is limited. In addition, data periods of these studies stopped prior to the year 2010 (for example, Oba *et al*, 2012; Sanni & Haji, 2014). This study, therefore, looks into the influence of corporate board diversity in influencing intellectual capital disclosure by non-financial services firms in Nigeria from 2011 to 2020.

2. Literature Review

2.1. Board Nationality and Intellectual Capital Disclosure

As the world becomes increasingly globalized, businesses prefer to change their governance structures by appointing more foreigners to their boards of directors (Carpenter, 1998; Oxelheim, *et al*, 2013). These directors have a deeper understanding of the global business environment. As a result, they make better investment and operational decisions, assist the organization in gaining access to international resources, and expand their commercial potential (Oxelheim *et al*, 2013). Hooghiemstra *et al* (2015) stated that foreign independent directors can improve boards' advisory capabilities by gaining first-hand knowledge of overseas markets and enabling them to create and utilize a network of foreign contacts. In a study by Rasmini *et al* (2014), the authors examined the effect of board diversity on the disclosure of intellectual capital in financial companies listed on the Indonesia Stock Exchange during the period 2004-2009 and found that the diversity of nationality influence the intellectual capital disclosure. In a study by Othman *et al* (2018), the authors examined whether board characteristics influenced the disclosure of innovation capital in 68 public listed companies in the main market of Bursa Malaysia over a five-year period from 2011 to 2015. The multiple regression results revealed that the presence of foreign directors on the board had a significant impact on the extent of innovation capital disclosure. However, using data from annual reports of 323 Southeast Asia's largest stock market and Indonesia's emerging economy during the period 2008 to 2017, Ulfah *et al* (2021) found that foreign ownership had a negative and significant impact on ICD of Indonesian firms. In view of the foregoing, the following hypothesis is formulated:

- H₀₁: Board nationality does not have a significant impact on intellectual capital disclosure.

2.2. Board Composition and Intellectual Capital Disclosure

The proportion of independent directors to the total number of directors is referred to as board independence (Haniffa & Cooke, 2002). Independent directors are needed on boards to oversee and manage executive directors' opportunistic behaviour (Jensen & Meckling, 1976). The participation of independent directors on boards can help to strengthen corporate governance systems. Fama and Jensen (1983) argued that independent directors also serve as an internal governance mechanism, encouraging management to share more information and so reducing agency conflicts between managers and owners.

Whiting and Birch (2016) examined whether proportion of independent directors on the board affect the voluntary disclosure of intellectual capital in annual reports in Australia and New Zealand. The finding of the study showed that a proportion of independent directors on the board had a significant positive impact on intellectual capital disclosure in both countries. Alfraih (2018) examined the influence of corporate governance mechanisms on the extent of intellectual capital disclosure among companies listed on the Kuwait Stock Exchange. A content analysis approach was used to study the extent of disclosures by firms and the association between dependent and independent variables examined using multiple regression analysis. The finding revealed that companies with higher proportions of external directors were associated with higher levels of IC disclosure. Dey and Faruq (2019) investigated intellectual capital disclosure practices and its determinants in Bangladesh's top 30 firms for the years 2013 to 2017. Content analysis was used to extract the data on the extent of intellectual capital disclosure from the annual report of the firms. The finding of the study revealed that board independence had a significant positive impact on ICD. In another study, Kusumawardani *et al* (2021) examine the impact of board structure on disclosure of intellectual capital among firms in Indonesia during the period 2008-2017. Using ordinary least square regression, the study found that board independence had a positive and significant effect on intellectual capital disclosure.

However, Tejedo-Romero and Araujo (2018) found that a greater number of independent directors negatively influenced the provision of HC information of companies listed in the Spanish continuous market during the period 2004-2008. In another study, Bhattacharjee *et al* (2017) investigated the association between the extent of IC disclosure and the corporate governance attributes of listed banking companies in Bangladesh for the year 2013 to 2015. The finding of the study revealed that board independence had no significant effect on ICD. Nurlis (2017) examined the influence of corporate governance mechanism on the intellectual capital disclosure of the 14 highest score IICD listed companies in the Indonesian Stock Exchange during the year 2012-2015. Using regression analysis technique, the result showed that independent commissioner composition did not influence intellectual capital disclosure significantly. Similarly, Dan and Arianti (2017) examined the factors that affect the disclosure of intellectual capital of Islamic Banks in Indonesia during the period 2011 to 2015. Content analysis was employed to determine intellectual capital disclosure. The result showed that independent directors on the board had no significant impact on ICD. Using data from annual reports of thirty non-financial listed companies from the Colombo Stock Exchange in Sri Lanka during the period 2019, Chandraratne *et al* (2021) found that board independence had no significant impact on ICD. Similarly, Hesniati (2021) found that independent commissioner composition had no effect on intellectual capital disclosure of 48 Indonesian listed companies. Thus, this research tests relationship between board composition and the extent of ICD with the following hypothesis:

- H₀₂: Board composition does not have a significant impact on intellectual capital disclosure.

2.3. Board Size and Intellectual Capital Disclosure

From another perspective, the size of the board is another factor that can influence IC disclosure. It is the total number of board members in an organization, including executive directors, non-executive directors, and independent directors. The size of the board of directors varies depending on the needs of the company and the resources available to cover the associated costs. Appropriate board composition in such a way that its size corresponds, among other factors, to the type of organization, the sector, and the influence of its environment is of paramount importance in order to ensure

significant influence, efficient supervision, and performance on the part of senior management. Abeysekera (2010) examined the effect of board size on intellectual capital resources using the top 26 firms ranked by the Nairobi Stock Exchange for market capitalization in 2002-2003. Using logistic regression, the study showed that firms disclosing more tactical internal capital and more strategic human capital had larger boards. In another study, Kamath (2019) found that board size plays a significant role in the extent of overall intellectual capital disclosures in Indian IT firms. Similarly, Kusumawardani *et al* (2021) examined the impact of board structure on disclosure of intellectual capital among firms in Indonesia during the period 2008-2017. Using ordinary least square regression, the study found that board size has positive and significant effect on intellectual capital disclosure. Similarly, Hesniati (2021) found that board size had a significant positive effect on intellectual capital disclosure of 48 Indonesian listed companies in Kompas 100 Index.

In another study by Rahman *et al* (2019), the authors examined the determinants of intellectual capital disclosure in the pharmaceutical and chemical industries of Bangladesh for the period of 2016 to 2017. Using content analysis to analyze the extent of ICD and a pooled cross-sectional regression method to find the determinants of ICD, the study revealed that board size had no significant impact on ICD. Similarly, Chandraratne *et al* (2021) found that board size had no significant impact on ICD of thirty non-financial listed companies from the Colombo Stock Exchange in Sri Lanka during the period 2019. Given the foregoing, the following hypothesis is proposed:

- H₀₃: Board size does not have significant impact on ICD.

2.4. Theoretical Review

2.4.1. Stakeholders Theory

Since each stakeholder in an entity requires different information, proponents of stakeholder theory argue that companies should satisfy all of these stakeholders' information needs through yearly reports. The postulates of this theory make broad assumptions about how businesses work in a complex multi-party context (Cots, 2011).

2.4.2. Signalling Theory

Many businesses have recently sought to improve their performance by delivering high-quality information disclosure. The situation indicated that the company will be more active in increasing stakeholder confidence and support for the management contract (Malone *et al.*, 1993). This is because information transparency can provide a good signal to all stakeholders, including ICD, so increasing the company's value. In the same vein, Whiting and Miller (2008) stated that ICD enables investors and other stakeholders to better assess the company's right, assess the company's ability in the future, and reduce the financial risk perception that may occur. It may be inferred that the disclosure of IC sends a larger favourable signal about the company's state, which may provide assurance and value to stakeholders, causing investors to buy shares, resulting in an increase in the company's stock price.

3. Methodology

The researchers collected pre-existing data from 44 listed non-financial services firms which are seen to be more inclined to IC during the period 1st January, 2011 through 31st December, 2020. Stratified sampling technique was used in arriving at the sample size (sectoral selection) of this study. However, for firms to be part of this study, some criteria were employed which are: (I) firms must have been quoted on the floor of Nigerian Exchange Group as at 1st January, 2011 (II) firms must have not been delisted from the floor of the Nigerian Exchange Group during the period of study (III) firms must have not been taken over or merged during the period of study (IV) firms must have filed complete annual reports on the Nigerian Exchange Group during the period of study. By applying the above filters, forty-four (44) firms were adjudged to have met the criteria. Table 1 presents the sectoral distribution of firms and sample used in the study. The descriptive statistics and regression analyses techniques were adopted for the study.

S/No	Sector Distribution	Population	Delisted/Quoted After 2011	Sample
1	Consumer Goods	21	4	17
2	Health Care	10	2	8
3	Industrial Goods	15	6	9
4	Information & Communication Technology (ICT)	7	2	5
5	Conglomerates	6	1	5
6	Total	59	15	44

Table 2: Population and Sample Size

Source: Authors' Compilation, 2022

There are fifty-nine firms in all. Forty-four firms were selected, while fifteen firms did not meet the criteria either for the fact that they were delisted during the study period or were not quoted as at 1st January, 2011.

3.1. Measurement of Variables

3.1.1. The Dependent Variable

3.1.1.1. Intellectual Capital Disclosure (ICD)

This is the quantity of information that companies reveal about their intellectual property. Content analysis was used to acquire the data for this proxy from the narratives in financial statements. The quantity of information on the IC included in the annual reports of the firms was measured using a disclosure index following the works of prior researchers such as (Ax & Maton, 2008; Salman *et al.*, 2013). A 0 and 1 coding method was utilized. That is, if a particular index item is found, a 1 is recorded, and if the provided item is not found in Nigerian firms' annual reports, a 0 is recorded. The extent of disclosure was determined by dividing the number of recorded information items in yearly reports by the maximum number of information items in the disclosure index (Yi & Davey, 2010; Alshhadat, 2017; Al-Sartawi, 2017). The following formula is used to calculate the extent of ICD:

$$ICD_j = \frac{TADS_j}{MRDI_j}$$

Where ICD_j is intellectual capital disclosure, $TADS_j$ is the total actual disclosure score for a company j and $MRDI_j$ is the maximum relevant disclosure items of the company j . Thus, to examine the factors influencing the level of IC disclosure, this study used the count of IC related words as the unit of the content analysis. The study then aggregated the disclosure frequencies of occurrence to determine the quantity of IC disclosure using the content analysis conducted earlier.

3.2.2. Independent Variables

The board diversity includes board nationality, board composition and board size, which are the independent variable in this study.

3.2.3. Control Variables

In this study, some control variables are used. Previous researches have revealed that firm size, auditor type, and firm age all have a significant impact on intellectual capital performance (for example, Ferreira *et al.*, 2012; Alshhadat, 2017; Firmasa *et al.*, 2018). As a result, the impact of firm size, auditor type, and firm age were taken into account in this study.

Proxies	Measurement
Intellectual Capital Disclosure (ICD)	Total scored items by the company/ Total maximum scores (Al-Sartawi, 2018; Al-Hajaya, 2019)
Board Nationality Diversity (BND)	Number of foreign directors divided by the total number of board members (Darmadi, 2011; Talavera, <i>et al.</i> , 2018)
Board composition (BDC)	Proportion of board of directors, who are non-executives (Nyarko <i>et al.</i> , 2018; Alfraih, 2018).
Board size (BSZ)	Total numbers of board members (Abeysekra, 2010; Alshhadat, 2017).
Firm Size (FSZ)	Natural logarithm of Total Assets (Zhang, 2012; Ferreira <i>et al.</i> , 2012; Alshhadat, 2017)
Auditor Type (ATP)	Dummy variable 1, if audited by big four auditor or its affiliation, otherwise, zero (Gan, <i>et al.</i> , 2013; Firmasa <i>et al.</i> , 2018)
Firm Age (FGE)	Number of years passed since incorporation (Barde, 2009; Damayanti & Budiyanawati, 2009)

Table 2: Measurement and Operationalization of Variables

Source: Author's Compilation, 2022

3.2.3.1. Model Specification

Ordinary Least Squares (OLS) regression is used to test the relationship between board diversity and ICD. The regression model for the study is as follows:

$$ICD_{it} = \beta_0 + \beta_1 BND_{it} + \beta_2 BDC_{it} + \beta_3 BSZ_{it} + \beta_4 FSZ_{it} + \beta_5 ATP_{it} + \beta_6 FGE_{it} + \varepsilon_{it}$$

Where:

ICD_{it} = Intellectual Capital Disclosure of firm i in period t

BND_{it} = Board nationality of firm i in period t

BDC_{it} = Board composition of firm i in period t

BSZ_{it} = Board size of firm i in period t

FSZ_{it} = Firm size of firm i in period t

ATP_{it} = Auditor Type of firm i in period t

FGE_{it} = Firm Age of firm i in period t

ε_{it} = Error term

β_0 = Constant

$\beta_1 = \text{Constant}$

Variables	Observation	Mean	Std. Dev.	Min.	Max.
ICD	440	0.8397	0.308	0.1	1.34
BND	440	0.2716	0.1946	0	0.67
BDC	440	0.8203	0.0738	0.50	0.925
BSZ	440	8.7977	2.4685	4	17
FSZ	440	7.0195	0.8781	4.6999	9.2611
ATP	440	0.600	0.4905	0	1
FGE	440	46.11	20.86	6	97

Table 3: Descriptive Statistics of the Variables
Source: Authors' Computation, 2022

Table 3 revealed that the overall mean intellectual capital disclosure score for sampled non-financial services firms in Nigeria has an average information disclosure of about 0.8397. This means that non-financial services firms in Nigeria disclosed intellectual capital at an average of 84%. The minimum disclosure level is 10% and maximum disclosure level is 134%. The standard deviation of 0.31 indicates that there is no significant variation in intellectual capital disclosure among the sampled non-financial services firms during the period of study.

Board nationality diversity has a minimum value of 0 and a maximum value of 0.67 meaning that there was a board in the firm during the study period that did not have foreign board members. Also, the highest percentage recorded for foreign nationals among the board members was 67%. The mean value is 0.2716 which implies that, on the average, there were, at least, 27% of foreign nationals represented on the board of the firms. The standard deviation of 0.1946 indicates that there is no significant variation in board nationality among the sampled non-financial services firms during the period of the study.

Board composition has a minimum value of 0.50 and maximum of 0.925. This means that the minimum percentage of non-executive directors is 50% for the firms, while the maximum composition of non-executive directors, to the total number of board members, is 92.5%. The average percentage of non-executive directors, to the total number of directors is 83%. This means that most of the firms had more non-executive directors than executive directors on their boards.

Board size had a minimum value of four (4) and a maximum value of seventeen (17). This implies that the lowest number of board members in the firms during the period of study was four board members, while the maximum number of board members was seventeen. On the average, the number of board members was about nine (9). This implies that most of the firms had nine members on their boards.

Firm size has a mean of 7.02, with a minimum of 4.70 and maximum of 9.26. However, the standard deviation of 0.87 suggests a high level of dispersion in the total assets among the sampled firms. The mean auditor type was 0.60. The minimum value is 0 and the maximum value is 1. Finally, age has a mean value of 46.11 years. The minimum value is 6 years, while the maximum value is 97 years respectively.

Variables	Coefficients	Robust Std Error	t-stat.	Prob.
Cons	0.1505	0.2237	0.67	0.501
BND	-0.186	0.071	-2.64	0.000
BDC	-0.975	0.215	-4.54	0.000
BSZ	0.018	0.007	2.67	0.008
FSZ	0.100	0.019	5.04	0.000
ATP	0.034	0.032	1.06	0.289
FGE	0.003	0.001	4.00	0.000
R-square = 0.3681				
F-statistics = 20.71				
Prob. = 0.0000				

Table 4: Summary of Robust Ordinary Least Square Regression
Source: Results Output from STATA

The cumulative adjusted R-squared (R^2) of 0.3681, which is the multiple coefficient of determination, gave the proportion of the total variation in the dependent variable as explained by the independent variables jointly. Thus, it signified that 36.81% of the total variation in intellectual capital disclosure of listed non-financial services firms in Nigeria is accounted for by the ratio of foreign board members to the total number of board members, its composition in terms of ratio of non-executive director to the total number of board members, and the size of board of directors. The F-statistics value of 20.71, which is significant at one percent, indicates that board diversity and intellectual capital disclosure model is fit. It implies that for any change in board diversity of the listed non-financial services firms in Nigeria, their intellectual capital disclosure will be affected directly. The P-value of F-statistics value, which is statistically significant at a level of 0.0000, implies that there is 99.9 percent probability that the relationship among the variables were not due to mere chance. Therefore, the results from the regression can be relied upon. Furthermore, it means that the independent variables reliably predict the dependent variable of the study.

The regression results revealed that board nationality has a coefficient value of -0.186 which is significant at 5%. This indicates that board nationality has a negative and significant effect on intellectual capital disclosure of the firms. This implies that for every increase in the percentage of foreign board members, the intellectual capital disclosure of the firms will significantly reduce by the coefficient value. Hypothesis one predicts that board nationality does not have a significant impact on ICD; however, based on the finding of the study, we, therefore, reject the null hypothesis. The finding concurs with those of Rasmini *et al* (2014) and Othman *et al* (2018), but contradicts that of Ulfah *et al* (2021).

Board composition recorded a coefficient value of -0.975 which is significant at 1% level. This shows that the composition of the board in term of ratio of non-executive directors to total directors negatively and significantly affected the intellectual capital disclosure of the non-financial services firms in Nigeria. This implies that when the numbers of non-executive directors increased, the intellectual capital disclosure of the firms will significantly reduce by the coefficient value. This finding is surprising and may be attributed to the fact that non-executive directors, who have overstayed in the firms, may be compromised due to close and long term relationships with executive directors. This may make them become ineffective in curtailing the excesses of the managers as they may not be able to help mitigate the agency problem by monitoring and controlling the opportunistic behaviour of management. Hypothesis two predicts that board composition does not have a significant impact on ICD; however, based on the finding of the study, we, therefore, reject the null hypothesis. This finding is in line with those of Tejedo-Romero *et al* (2017), Alfraih (2018) and Dey *et al* (2019). However, it is in contrast to those of Bhattacharjee *et al*, (2017), Nurlis (2017), Chandraratne *et al* (2021) and Hesnati (2021).

The result in respect of board size has a coefficient value of 0.018 which is significant at 5%. This indicates that board size has positive and significant impact on intellectual capital disclosure of the firms. This implies that for every increase in the number of board members beyond a certain number, there is an increase in the level of intellectual capital disclosure of the firms. This finding confirms that larger board is expected to be more effective because members will have a variety of rich ideas, suggestions and it will effectively monitor management actions. Hypothesis three states that board size does not have a significant impact on ICD, however, based on the finding of the study, we, therefore, reject the null hypothesis. The finding is in line with those of Abeysekera (2010), Kusumawardani *et al* (2021) and Hesnati (2021). This finding, however, contradicts those of Rahman *et al*, (2019) and Chandraratne *et al* (2021).

Firm size recorded a coefficient value of 0.100 which is significant at 1%. This indicates that large firms disclosed more intellectual capital voluntarily than smaller ones. This implies that an increase in the size of the firm by one unit, other variables remaining constant, will increase the extent of intellectual capital disclosure. Hence, large firms disclose more information than small ones because of their characteristics such as lower information production costs, higher complexity in business operation, wider ownership base, greater liability to agency costs, and more susceptibility to political costs (Jensen *et al*, 1976 and Watts & Zimmerman, 1986).

Auditor type recorded a coefficient value of 0.034 which is significant neither at 1% nor at 5%. This implies that the type of audit firm that examined the book of accounts of the firms had insignificant effect on their intellectual capital disclosure. Age, which is measured by number of years a firm has since been incorporated, the result shows that age has a positive and significant impact on intellectual capital disclosure at 1% with positive coefficient estimation.

4. Conclusion and Recommendations

In recent times, board diversity variables have drawn an increasing amount of research from all over the world. The majority of empirical studies on board diversity, however, have taken place in the developed world. Since diverse databases, regulatory systems, and environments affect board diversity in different nations, generalizing the findings of these studies in the Nigerian environment may be impossible. As a result, the study's goal is to examine the impact of board diversity on intellectual capital disclosure in Nigerian listed non-financial services companies during the period 2011-2020. The study is based on the impression that diverse boards, through their experiences and professional competencies, have a significant influence on ICD.

The study concludes the presence of foreign directors on the boards of non-financial services firms in Nigeria significantly but negatively influences their ICD. Similarly, the finding of the study shows that having a large number of non-executive directors as board members reduced the extent of ICD significantly. Furthermore, according to the study's findings, having large board members ensure increased intellectual capital disclosure.

This study offers some interesting recommendations into board diversity variables and its effect on ICD in listed non-financial services firms in Nigeria. These findings are useful for management by ensuring that there is increase in the percentage of foreign members on the board of listed non-financial services firms in Nigeria since some firms do not have foreign directors on their firms. Additionally, foreign members on the board should ensure that they attend board meeting regularly. Additionally, in order to enhance board independence and effectiveness in monitoring the management, SEC should limit the tenure of non-executive directors, and should ensure that the independence of non-executive directors is protected so as to improve their capacity and capability of monitoring management to disclose more information on intellectual capital voluntarily. Finally, emphasis should be placed on the numbers and quality of members and their effectiveness in enhancing more intellectual capital disclosure of the firms.

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