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THE MODERATING EFFECT OF BOARD HOMOGENEITY ON THE RELATIONSHIP BETWEEN INTELLECTUAL CAPITAL DISCLOSURE AND CORPORATE MARKET VALUE OF LISTED FIRMS IN NIGERIA

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ABSTRACT

This paper examines whether or not concentration of board members based on ethnicity and religion can impact on intellectual capital disclosure and thereby influence the corporate market value in Nigeria. This article reports the results from a two-step dynamic system generalized method of moment estimation based on 455 firm-year observations from 91 listed firms on the main board of the Nigeria Stock Market for the period 2010-2014. The study measures board homogeneity based on religious and ethnic affiliations of corporate board members in line with upper echelons theory in explaining their moderating effect on the relationship between intellectual capital disclosure and firm value which is proxied by cost of capital and share price volatility. The empirical results indicate that board ethnic and religious composition has moderating effect on the relationship between intellectual capital disclosure and cost of corporate market value. Though the finding might not be extended to smaller firms which could be a limitation, the results of this study are useful to all stakeholders especially the financial reporting council of Nigeria in policy formulation and perhaps issuance of corporate governance standard that would provide a more diversified board than currently being practiced in the country among the larger firms. The study is the first to consider moderating effect of religious and ethnic composition on the relationship between intellectual capital (IC) disclosure and corporate market as well as controls for heteroscedasticity and endogeneity issues by adopting two-step system generalized method of moments as a parameter estimator.

JEL Classification: M41, M48

Key words: Intellectual capital disclosure, Board homogeneity, Share price volatility, Cost of capital, Nigeria

1. INTRODUCTION

This article examines the role of moderating effect of homogeneity of board of directors of listed firms on the relationship between quality of Intellectual capital (IC) disclosure and corporate market value in Nigeria. Effective corporate governance has been advocated globally as nations continuously strengthen their code of best practices among corporate organizations. In spite of the improvement in corporate governance issued globally, the world economy is not quite free from a number of corporate failures and economic downturn such as the recent 2008 global financial meltdown. Most of these events are being attributed to the inadequacy of organizations' governance mechanisms.

One of the concerns is the structure of corporate board of governance which has been criticized for lacking in diversity (Wellalage and Locke 2013). Board diversity has acquired an optimal degree of strategic salience within corporate entities recently as institutional investors begin to incorporate diversity screens as a component of their investment practices (Ntim 2015). This is to strengthen the decision-making procedures as members from different backgrounds, experience, age, nationality, ethnicity and religion could bring varieties of ideas (e.g., Carter, Simkins, and Simpson 2003; Coffey and Wang 1998) regarding investment, performance and reporting processes (Finkelstein and Hambrick 1990; Haniffa and Cooke 2002).

Previous literature suggests that financial disclosures could affect corporate cost of capital since the disclosures improve information symmetry and minimize estimation error of cost of capital, thus enhancing corporate market value (Botosan 1997, 2006). Theoretically, an entity strives to maintain a value by investing only in profitable projects that yield returns more than the cost of financing such a project, hence cost of capital can be associated with corporate market value. Also, investors determine the value to be placed on a corporate entity based on the risk and return trade off. The riskiness of assets can be estimated either by standard deviation or variance of the asset price (Hull and White 1987), which has been defined as volatility of price of the assets. Based on the signaling concept, the flow of information can influence share price volatility in the market. In summary, both cost of capital and share price volatility can be more appropriate in explaining the value relevance of information. Going by the understanding that the value relevance of conventional financial statements has been on the decrease and growing significance of IC

information, several research reports and studies (e.g., Mouritsen, Bukh, and Marr 2004; Petty, Ricceri, and Guthrie 2008; Upton 2001) have argued for more disclosure of IC related information as it is seen as a leading factor in corporate valuation by various stakeholders most especially the investors.

Meanwhile, the upper echelons theory claims that the board room members play a significant role in investment and utilization of corporate strategic resources as well as communicating the adequate information to the users of financial statements. They might have influence on corporate value through a series of decisions therefrom (Hambrick 2007). Thus, board diversity is therefore expected to strengthen the association between IC and corporate value if it can be considered as the panacea for sound corporate governance. Conclusively, the current study incorporates board diversity as a moderating factor on the relationship between intellectual capital and corporate value. While most existing studies have considered diversity from gender, education, tenure, age and nationalities of board members (Erhardt, Werbel, and Shrader 2003; Johanne, Stephen, and Bruce 2007; Mishra and Jhunjhunwala 2013), the current study proposes to proxy diversity using ethnicity and religion of members of the board of directors of listed firms in Nigeria due to recent events in the country (see section 2.2 for details). The findings from the data analyses using two-step dynamic system generalized method of moments, while controlling for possibility of heteroscedasticity and endogeneity issues in the variables, indicate the ethnic and religious composition has significant impact on the relationship between IC disclosure and corporate market value during period of study.

To the best of our knowledge, this is a pioneer study that examines the role of these variables on the relationship between IC disclosure and corporate value in general and more specifically in the emerging economy of Nigeria. The remaining part of the study is structured as follows: section two discusses the literature review, theoretical framework and hypotheses development, section three considers the methodology, while section four and five respectively portray the data analysis and conclusion of the study.

2. LITERATURE REVIEW

2.1 KNOWLEDGE -BASED ECONOMY IN NIGERIA

Due to a series of economy reforms embarked upon, there is evident dynamism in the Nigerian economy through shifting from its traditional product-based economy to a knowledge-based orientation

and diversification approach (Ibikunle and Damagum 2013) which signifies the significance of intellectual capital in the country. Though Nigeria is known for its strategic natural resources such as crude oil and agricultural products, recent developments in the nation are seen to present the characteristics of an economy driven by knowledge orientation. Knowledge-based economy is characterized by globalization, liberalization of vital economic sectors namely telecommunications, transportation, energy and financial services (Teece 2000), and incremental expansion of technological change, such as the emergence of new information and communication technologies (Soete and Ter Weel 1999).

The Nigerian economy presently exhibits the above characteristics as policy on globalization affords foreign investors to invest and even serve on the board of corporate entities. Also, the privatization of telecommunication service, financial services, electricity, transportation and various investments in ICT through the launch of the country's satellites can testify to the knowledge orientation of the Nigerian economy. These developments have changed the way of doing business in Nigeria as most companies now maximize the utilization of these resources in their activities and by implication, invisible assets of business such as skills, learning and knowledge are now being considered as key strategic issues (Ibikunle and Damagum 2013).

Since the knowledge-based economy has brought a new concept into the research world named as intellectual capital, studies have examined the value relevance of this concept regarding overall corporate performance (e.g. Joshi et al. 2013; Kamath 2008; Muhammad and Ismail 2009); stakeholders such as investors, creditors and financial analysts are beginning to demand more reliable information on expertise, experience, managerial qualities, and customer relations, which are all features of intellectual capital (e.g., Boujelbene and Affes 2013; Orens, Aerts, and Lybaert 2009; Vafaei, Taylor, and Ahmed 2011).

Despite of studies on this concept, the literature regarding Nigeria still remains scanty as only a few studies (e.g., Haji and Mubaraq 2012; Ibikunle and Damagum 2013; Okpala and Chidi 2010; Salman et al. 2012) have researched IC. To demonstrate, Okpala and Chidi (2010) consider human capital accounting and conclude that human resource/capital accounting could be a significant factor for internal decisions by management and external decisions by investors in Nigeria. However, the study only focuses on one component of IC without recognizing others such as relational and structure capital.

From the disclosure perspective, Haji and Mubaraq (2012) document a positive trend of IC disclosures in the Nigerian banking industry. Yet, none of these studies consider the value relevance of the IC disclosure in the country, creating a gap in the literature regarding the Nigerian context.

2.2 ETHNIC AND RELIGIOUS ISSUES IN NIGERIA

Nigeria, since unification in 1914 by her colonial master, has witnessed a number of ethnic and religious struggles and conflicts of varying magnitude. Ideally, the spirit of federation and nationalism upon which the nation is built is expected to override all ethnic or religious affiliations of Nigerians; unfortunately, this is not the case as most ethno-religious conflicts were based on ethnic or religious identity. Diversity, per se, is not the problem. Its management, however, presents Nigeria with formidable challenges. A divisive interplay of ethnicity and religion in Nigeria has led to rising nationalism and militancy of various ethnic and religious movements in the society at large. The situation is said to be common phenomenon in Nigeria which led to constitution of the national conference committee, a formal platform for dialog by constituent units of the nation convened by the national government to discuss issues or problems that inhibit national progress or challenge national cohesion. The committee was launched by the country's president in mid- 2014 to offer solutions to the perceived societal problems that endanger national unity. The committee clearly identified religion and ethnic diversity as two main issues affecting the socio-economic activities in Nigeria (Confab 2014).

Going by the main finding of the conference that restated the impact of religion and ethnic diversity at the macro level in the country and that board members are also persons of one ethnic and religion diversity in the country, the current study assumed that these attributes might equally be affecting their decision making in the board rooms. Hence, the two variables were used as surrogates of board diversity in the current study. However, to a significant extent, some of the above highlighted issues justify the suitability of Nigeria as domain of this study and religion and ethnic background of members of corporate board of director as surrogates of board diversity. As discussed earlier, the Nigerian economy is presently being streamlined toward knowledge based, providing us with the opportunity to examine further the value relevance of IC in the country as this can only be adequately examined in economies where intangible assets are said to

be prominent and important (e.g., Edvinsson 1997; Lev and Sougiannis 1996).

2.3 EMPIRICAL STUDIES ON BOARD OF DIRECTOR DIVERSITY

Researches have documented that diversity of corporate board member is responsible for assuring, mobilizing and orienting human, culture, innovation, external-structure capitals, and internal-structure capitals oriented toward achieving the goals of and values for the firm (Keenan and Aggestam 2001). These studies have considered diversity from the perspectives of gender, education, tenure, age, among others (Erhardt, Werbel, and Shrader 2003; Johanne, Stephen, and Bruce 2007; Mishra and Jhunjhunwala 2013).

However, in line with the upper echelons theory, the current study proposes board diversity as the moderating variable between IC disclosure and corporate market value within the Nigerian context. The theory opines that executives' experiences, values and personalities greatly affect their interpretations of the situations they face and, in turn, affect their decision-making activities (Hambrick 2007). The theory places primary emphasis on observable managerial characteristics such as age, tenure in the organization, functional background, education, socioeconomic roots and financial position among others as indicators of the "given" that a manager brings to an administrative situation (Hambrick 2007) which usually affect their decision-making activities and corporate outcome (Ben-Amar et al. 2013). These observable characteristics are usually the common features of members of the corporate board of directors that have been defined as board diversity (Coffey and Wang 1998).

Besides, board diversity is defined as dissimilarity among its members resulting from manifold sources such as expertise and managerial background, personalities, learning styles, education, age and values (e.g. Coffey and Wang 1998; Johanne, Stephen, and Bruce 2007). In line with the focus of the present study, the upper echelons theory is appropriate in explaining the moderating role of board diversity on the relationship between corporate value and IC as the theory has been used to argue for the moderating effect of board composition (Hao and Shih 2008) and managerial discretion (Finkelstein and Hambrick 1990).

The effectiveness of board diversity has resulted in two opposing views: homogeneity and heterogeneity views. The former argues that with a more diverse range of views and opinions, consensus may be difficult to achieve, which in turn may increase conflict, delay decision-making, encourage group-think, and devolve

personal responsibility (e.g. Erhardt, Werbel, and Shrader 2003; Hambrick, Cho, and Chen 1996; Knight et al. 1999). The heterogeneity view holds that a well-diversified board has greater benefits for the organization's stakeholders and a lower degree of board diversity might raise significant ethical and economic problems since it would be unethical for a set of individuals to be denied access to societal power on the basis of their gender, race, religious or any other individual traits unrelated to their ability (Keasey, Thompson, and Wright 1998). It is further opined that board homogeneity means foregone talent and, by implication, reduces performance and amounts to sub-optimal value of the company's board if a section of the community's genius is methodically exempted from board directorships not due to talent incapability, but gender, religious, ethnicity, among others (Burke 1997).

Studies by Al-Matari, Fadzil, and Al-Swidi (2014, 2014) and Al Matari, Al Swidi, and Fadzil (2014) have recently explored board diversity as a moderating variable utilizing foreign nationalities and board commitment. The authors establish that board diversity can significantly moderate the relationship between corporate performance and board features such as audit committee's characteristics, board of directors' characteristics and executive committee's characteristics among the listed firms in Oman. Therefore, based on upper echelons theory and basic principle of corporate governance, the current study assumes that ethnicity and religion of board members can moderate the expected relationship between IC disclosure and corporate market value among listed firms in Nigeria.

2.4 UPPER ECHELONS THEORY AND BOARD DIVERSITY

Upper echelons theory places primary emphasis on observable managerial characteristics such as age, tenure in the organization, functional background, education, socioeconomic roots and financial position, among others, as indicators of the "givens" that a manager brings to an administrative situation (Hambrick 2007) which usually affect their decision-making activities and corporate outcome (Ben-Amar et al. 2013). These observable characteristics are usually the common features of corporate board of directors' members that have been defined as board diversity (Coffey and Wang 1998).

Besides, diversity of board is defined as dissimilarity among its members resulting from manifold sources such as expertise and managerial background, personalities, learning styles, education, age

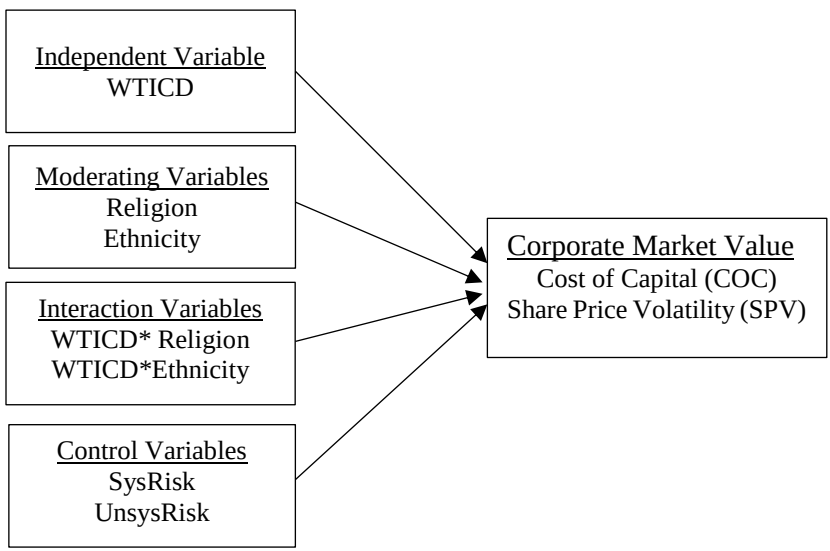
and values (e.g. Coffey and Wang 1998; Johanne, Stephen, and Bruce 2007). In line with the focus of the present study, the upper echelons theory will be appropriate in explaining the moderating role of board diversity on the relationship between corporate value and IC as the theory has been used to argue the moderating effect of board composition (Hao and Shih 2008) and managerial discretion (Finkelstein and Hambrick 1990).

However, while board diversity has been defined using features such as gender, age, education, culture, race, and religion among others, the current study proposes to utilize religious and ethnic affiliation as surrogates of board member diversity because` of their roles on day-to-day events in Nigeria (Confab 2014). To sum up, upper echelon theory is adopted in explaining the moderating influence of religion (religious affiliation) and ethnicity on the expected relationship between IC and corporate value in the present research.

2.5 CONCEPTUAL FRAMEWORK

Based on the underpinning theory and the established association between voluntary disclosure and corporate market value as well as the perceived moderating effect of board homogeneity, the study proposes the following conceptual framework.

FIGURE 1
Conceptual Framework Utilized in the Study



The dependent variable is measured as cost of capital and share price volatility while the independent variable is estimated as overall IC disclosure. Board ethnic and religious affiliations were considered as moderating variables. The product of independent variable and moderating variable is considered as interaction variables. Also, included in the framework are control variables which are considered relevant in explaining the dependent variables. These are systematic and unsystematic risk. The details definition, measurements and sources of these variables are presented in Table 3.

2.6 INTELLECTUAL CAPITAL DISCLOSURE, BOARD ETHNICITY AND CORPORATE MARKET VALUE

Studies such as the one by Crano and Chen (1998) suggest that the inclusion of an ethnic person into the social mix of the board of directors has the potential to stimulate divergent thinking in the decision-making processes which have far-reaching effects on organizational performance. In addition to promoting change in the original perceptions and views held by the board of directors, a board member from a different ethnic group may also assist in generating more original approaches to intellectual and decision-making (e.g., Bantel and Jackson 1989).

Further, Erhardt, Werbel, and Shrader (2003) specifically suggest that board diversity might boost access to critical resources, which should suggest a positive performance impact of diversity as it relates to age, gender, and nationality. For example, a more diverse board could benefit from a greater understanding of its customers (Carter, Simkins, and Simpson 2003) or other key stakeholders. Also, management research has highlighted that board diversity might enhance task performance, such as the board's roles in servicing/advising, monitoring, and getting access to resources (Daily and Dalton 2003). For instance, Maznevski et al. (2002) reveal that cross-cultural teams are more creative and generate additional and better alternative solutions and that the performance variation is higher for teams with greater cultural diversity.

From the IC research point of view, however, research on the influence of board ethnicity on IC is very scanty except for Abdul Rashid et al. (2012) who examined the impact of board ethnicity on IC disclosure in IPO in Malaysia. The authors reveal absence of significant relationship between IC disclosure and ethnicity of corporate board in the country. Also, Williams (2001) reveals that ethnic diversity in the boards of directors of South African publicly

listed firms has positive association with intellectual capital performance. The author concludes that South African publicly listed firms may be able to enhance their IC performance by utilizing a well-balanced and structured board of directors in terms of ethnic representation.

Further, regarding the association between board ethnicity and corporate value, Ntim (2015) examines the impact of board ethnicity on corporate value and reveals positive association between the two concepts. Wellalage and Locke (2013) also document a positive significant effect of board ethnicity on firm financial performance among listed firms in Sri Lanka. It can be deduced from these studies that board ethnicity can be used as moderating variable in the relationship between IC and corporate value as this explains the dual role of board of directors in line with the basic principle of corporate governance (e.g., Fama 1980; Keenan and Aggestam 2001) and upper echelons theory (e.g., Hambrick 2007; Hambrick and Finkelstein 1987; Hambrick and Mason 1984). However, most members of directors of listed firms in Nigeria are persons of a particular ethnic origin and ethnicity has been observed as one social factor that influences the day-to-day activities in the county (Confab 2014). Thus, the current study assumes the moderating role of ethnicity on the expected relationship between IC and corporate value of listed firms in Nigeria. This is hypothesized based on the advanced the conceptual framework of present study as follows:

H_1: *There is significant effect of ethnicity on the relationship between IC disclosure and corporate market value.*

2.7 INTELLECTUAL CAPITAL DISCLOSURE, BOARD RELIGIOUS AND CORPORATE MARKET VALUE

Religion has been seen as an individual's self-identity; deviation from religious role anticipation also creates higher degrees of cerebral and expressive embarrassment, which encourage devotees to maintain their actions in line with role expectations (Weaver and Agle 2002). Studies have revealed the impact of religious affiliation on corporate directors' decision and organization outcomes. For example, McGuire, Omer, and Sharp (2012) found that the association between religiosity and financial reporting quality is stronger when external monitoring is lower. They find that religion is negatively associated with accounting risk, the likelihood of shareholder lawsuits and the likelihood of a restatement.

Further, El Ghoul et al. (2012) also found that religion is negatively associated with the firm's cost of capital. Hilary and Hui (2009) provide indirect evidence suggesting that investors perceive the positive association between religious and risk aversion in US counties. They attributed their findings to the marginal investor in the equity market of these firms being less risk averse than the firm's managers. Unlike ethnicity, religion of board members has not been used in studies related to IC but based on the basic principles of dual role of board of corporate organization and upper echelons theory, the current study proposes that religion, like any other board structures, can be used as a moderating variable between IC and corporate value. However, given that religion has been observed as a great phenomenon that influences decision-making processes in Nigeria (Confab 2014) and that directors of listed firms in Nigeria are persons of religious affiliation together with the upper echelons theory, the current study proposes the moderating role of religion on the expected relationship between IC and corporate value of listed firms in Nigeria. This is hypothesized based on the proposed conceptual framework of this study as follows:

H_2: There is significant effect of religion on the relationship between IC disclosure and corporate market value.

3. METHODOLOGY

The study seeks to examine the value relevance of IC disclosure in the emerging market of Nigeria. The study uses secondary sources of data of annual reports and accounts in line with prior IC disclosures studies (e.g., Abeysekera 2008; Haji and Ghazali 2012; Haji and Mubaraq 2012; Oliveras et al. 2008) as they are most significant documents that provide the results of management stewardship to corporate stakeholders, especially residual owners (Beretta and Bozzolan 2004). Annual reports also have a high degree of reliability and credibility compared to other information, since the corporate directors claim responsibility.

In addition, the study regards all 178 firms listed on the main board of the NSE as of January 2010 as population for the purpose of analyses in order to generate findings that have a far reaching generalizability across all the economic sectors in the country. However, based on the nature and objectives of this study, it employs some filters to eliminate some firms considered unsuitable for the study. Importantly, the study used five filters to eliminate companies

considered unsuitable from the population for the intent of the present study. These include first, companies that voluntarily withdrew from the stock market during the period. Second, companies placed on technical suspension or being delisted by regulators from 2010 to 2014. Third, firms engaged in scheme of merger and acquisition during the research period. Fourth, any firm that has been nationalized by the government through her agencies and finally, any company that cannot provide adequate data regarding the variable of interest of the present study. Considering these filters at the end of December 2014, the population had been filtered down to 91 firms, representing about 51% of total population of listed firms on the main board of the Nigerian stock exchange during the period under study. Table 1 exhibits the sectorial classifications of these firms and their percentages.

TABLE 1
Sectorial Classifications of Sample Firms

S/N	Sectors	Numbers	Percentage (%)
1	Agriculture	2	2.20
2	Conglomerates	4	4.40
3	Construction/Real estate	2	2.20
4	Consumer goods	16	17.58
5	Financial services	34	37.36
6	Healthcare	7	7.69
7	ICT	3	3.30
8	Industrial goods	8	8.79
9	Oil and Gas	4	4.40
10	Services	11	12.08
	Total	91	100

3.1 DEPENDENT VARIABLES

3.1.1 COST OF CAPITAL ESTIMATION

The study employs the price/earnings to growth (PEG) ratio advanced by Easton (2004) to compute the cost of capital. Studies such as Khurana and Raman (2004) and Botosan and Plumlee (2005) documented that this approach is a better estimate of corporate cost of capital because it yields a measure capturing stock risk in a consistent and predictable direction and requires only data on stock price and earnings growth, thus avoiding the problem of losing a substantial number of observations as compared to that of other approaches.

3.1.2 STOCK PRICE VOLATILITY ESTIMATION

Stock price volatility was measured based on the annual range of adjusted stock price obtained from the Nigerian stock exchange for each sampled firm on a yearly basis. The range was then divided by the average of the highest and lowest prices obtained in the year and then squared. This was averaged for all available years and a square root transformation was applied so as to obtain a variable comparable to a standard deviation that could not be influenced by extreme values. This estimate has been considered by prior studies such as Baskin (1989) and Hussainey, Mgbame, and Chijoke-Mgbame (2011).

3.2 INDEPENDENT VARIABLE

3.2.1 IC DISCLOSURE CHECKLIST

The study utilizes content analysis (CA) to generate information for the purpose of analyses. An important component of CA is to structurally amplify a checklist that could enable categorization of the content units. Consequently, following the review of prior studies (Haji and Anifowose 2017; Bontis 2003; Cordazzo and Vergauwen 2012; Guthrie, Petty, and Ricceri 2006; Haji and Ghazali 2012), the present study develops checklist of 49 items of IC after familiarization with the pattern of IC disclosure of sampled firms as presented in Table 2.

3.2.2 SCORING IC DISCLOSURE

A scoring measure on Likert scale of four (0-3) was considered in order to measure the quality of IC disclosure (e.g., Abeysekera 2008; Guthrie, Petty, and Ricceri 2006). Following Haji and Ghazali (2012) and Haji and Anifowose (2016, 2017), a score of 3 was denoted if the items were disclosed in Naira term, a value 2 if the items were disclosed in numerical form, a value of 1 is assigned should item appear in narrative form, and a value of 0 is assigned if the item did not appear in the annual report. Thus, the total scores (TXS) are computed as the proportion of actual score (AXS) to maximum possible score (MXS) (i.e. 3X 49 =147). The TXS of a company is obtained by:

(1) $$TXS = \frac{AXS}{MXS}$$

3.2.3 VALIDITY AND RELIABILITY OF THE SCORE

Validity and reliability of the scores have been a source of concern in intellectual capital disclosure in recent times (Dumay and Cai 2014) due to inherent problem associated with the approach. To overcome this, the present study carried out a two - stage checklist scoring approach. We begin with pilot scoring using top 10 listed corporate entities in order to create familiarization with the annual reports. Secondly, we then score the sampled annual reports independently and compared their scores. The areas of differences were then rescored jointly to correct the discrepancies.

TABLE 2
List of Intellectual Capital Disclosure Items Employed in the Study

1	Number of Employees	26	List of Customers
2	Employee satisfaction	27	Customer satisfaction
3	Employee retention	28	Customers loyalty
4	Compensation to employees	29	Customer Appreciation
5	Engagements with employees	30	Customer retention
6	Recruitment from the local communities	31	Customer service/support
7	Disability recruitment policy (number)	32	Customer feedback system
8	Employee Know-how	33	Distribution channels
9	Education Background	34	Customer Market Share
10	Employee succession planning program	35	Company awards
11	Work-related knowledge	36	Company image/reputation
12	Knowledge sharing	37	Customer training & education
13	Employee health and safety	38	Diffusion & networking
14	Employee Expertise	39	Innovation
15	Training and development	40	Research and Development
16	Cultural Diversity	41	Brands
17	Corporate Culture	42	Knowledge-based
18	Information Systems (Technology)	43	Research collaboration
19	Financial Relations	44	Goodwill
20	Business Collaboration	45	Patent
21	Favorable contracts	46	Copyright
22	Organization flexibility	47	Trademarks
23	Organization structure	48	Licenses
24	Organization learning	49	Commercial rights
25	Quality management		

3.3 MODERATING VARIABLES

Board ethnicity and religion were utilized as moderating variables in the present study. The information on these variables were derived from firms' financial statements. Due to uniqueness of names in the country, it is very easy to identify individual ethnic and to large extent the religious affiliation. The details of each director are found in the chairman's report component of financial statements and where the religion affiliation could not be ascertained, a further enquiry about such individual was made by 'googling' for the curriculum vitae. This study utilized a dichotomous variable to proxy the level of ethnicity and religion of corporate board of directors. The dummy variable was based on the quorum of meeting of board of directors as stated in the SEC code of corporate governance in the country. Since the quorum of the meeting of BOD is two-thirds of its members as stated in the SEC's code of corporate governance, the study then assigned 1 to corporate board whose two-third of its member belong to same religion affiliation and otherwise the study will assign 0. The same process was followed for ethnicity. This measure would prevent the likelihood of multicollinearity problem usually associated with interaction variables (Field 2013; White and Bui 1988; Wooldridge 2010). Thus, this would be in line with the homogeneity view of board diversity. Meanwhile, in order to detect the level of moderation, there is need for creation of interaction variable (Aiken, West, and Reno 1991). The interaction term is the product of multiplying the predictor variable with the moderator variable. This study creates the interaction variable *(WTICD* Ethnicity)* and *(WTICD* Religion)* by multiplying the predictor variable board of Overall IC disclosure *(WTICD)* with the moderator variables *ethnicity* and *religion*, respectively.

3.4 CONTROL VARIABLES

Based on theoretical assumptions of the present study and the prior empirical studies (e.g. Botosan 2006; Botosan and Plumlee 2002; Bowen, Chen, and Cheng 2008; El Ghoul et al. 2011; An, Davey, and Eggleton 2011; Galbreath 2005), the study incorporates systematic and unsystematic risks as control variables. Systematic risk is the Beta coefficient (β) of security market line (Fama and French 1993) which is based on the covariance of total market return to that of individual securities or the slope of the regression of market return in relation to the return of each security on the stock market (e.g. Bodie, Kane, and Marcus 2011). However, the current study computed systematic risk based on the aforementioned approaches using daily market return of

NSE and that of each of 91 sample firms over the period of study, which is January 2010 to December 2014. Having computed systematic risk which is the general risk common to all listed firms on the exchange, the unsystematic risk, also known as "unique risk or firm-specific risk" is computed based on the general notion that "total risk = systematic risk + unsystematic risk" (e.g. Bodie, Kane, and Marcus 2011; Fama and French 1993). To arrive at the unsystematic risk, the study computed the total risk of the firm using standard deviation of the expected return and deducted the systematic risk therefrom.

3.5 DATA ANALYSIS METHODS

This section presents methods of estimator employed in the present study to analyze the data for answering the research questions and testing the hypotheses. The study commences analyses with description of data to confirm the normality of the series and this is followed with Pearson Correlation Matrix and Variance Inflation Factor in order to evaluate the possibility of multicollinearity among independent variables (e.g., Field 2013; Hinton et al. 2004). Two step system generalized method of moment GMM was employ due to its capacity to over the problem of endogeneity of variables which are commonly observed in corporate governance researches (Schultz, Tan, and Walsh 2010; Wintoki, Linck, and Netter 2012). GMM could correct for potential impact of autocorrelation, heteroscedasticity, and contemporaneous correlation inherent in panel structure (for review, Blundell and Bond 1998, 2000; Certo and Semadeni 2006; Roodman 2008) which could affect the expected relationship between dependent and independent variables. Thus, the estimations were made based on stochastic models as follows.

$$
\begin{aligned}
(2)\quad [COC/SPV]_{it} = {} & \vartheta_0 + \vartheta_1[COC/SPV]_{it-1} + \vartheta_2 \sum_{i=1}^{5} WTICD_{it} \\
& + \vartheta_3 Ethnicity_{it} + \vartheta_4 Religion_{it} \\
& + [\vartheta_5 \sum_{i=1}^{5} (WTICD * Religion)_{it} \\
& + [\vartheta_6 \sum_{i=1}^{5} (WTICD * Ethnicity)_{it} \\
& + \vartheta_7 \mathrm{SysRisk}_{it} + \vartheta_8 \mathrm{UnsysRisk}_{it} + \varepsilon_{it}
\end{aligned}
$$

The details definition, measurements and sources of acronyms utilized in the study are presented in the Table 3.

TABLE 3
Details of Acronyms

Symbol	Definition	Measurement	Sources
		Independent Variable	
WTICD	Weighted Overall Intellectual capital disclosure	Ratio of actual score to maximum possible score Overall IC	Annual report
		Dependent Variable	
COC	Cost of capital	Price/Earnings to growth	Financial Analysts reports
SPV	Share Price Volatility	Standard deviation of daily price of share	Official Price List of NSE
		Control Variable	
SysRisk	Systematic Risk	Covariance of total market return to that of individual securities	Official Price List of NSE
UnsysRisk	Unsystematic Risk	Unsystematic risk = total risk minus systematic risk	Official Price List of NSE
		Moderating Variable	
Religion	Religion Affiliation of board member	1 if 2/3 has the same religious background, 0 otherwise	Annual report/ Firms' website
Ethnicity	Ethnic Affiliation of board member	2 if 2/3 has the same religious background, 0 otherwise	Annual report/ Firms' website

4. DATA ANALYSES AND FINDINGS

The findings from the system GMM estimate on the moderating effect of corporate board homogeneity on the association between IC disclosure and corporate market value among the listed firms in Nigeria for the 2010-2014 accounting years are presented in this section. The analyses are preceded with the presentation of descriptive statistics, correlation coefficient and variance inflation factor result in order to confirm the normality and multicollinearity condition of the data.

4.1 DESCRIPTIVE STATISTICS ANALYSIS

Table 4 shows that the average cost of capital of the sampled firms over the period of analysis is about 11% which indicates the expected

cost of capital and discounting factor for investment appraisal among the listed firms in Nigeria (Bodie, Kane, and Marcus, 2011). However, there was negative minimum value indicating that some firms had negative cost of financing during the 2010-2014 financial years. The table also exhibits the average level of share price volatility of sampled firms during 2010-2014 to be around 3 with a maximum of 125. Representing these in percentages, it can be deduced that high level of fluctuations in the share prices of most of the sampled firms on the floor of NSE occurred though the minimum value of 0.000 shows there were some that hardly changed.

Total IC disclosure (*WTICD*) shows an average value of 3 which was not far from its median value. The results of skewness, kurtosis and Jague-Bera further explained the pattern of distribution. Across all variables, there were mixed findings regarding normality based on the skewness value as some were within the benchmarks of -3 to 3 (Wooldridge, 2010) while others were not. Further, a closer looked at the kurtosis values suggests that most of the observed variables had violated the cut-off point, an indication of non-normality of the distributions. As for the control variables, the average value of market imposed risk among the sample firms is 0.20 which is lower than the market beta of 1. This indicates that most of the firm are not as risky compared with the market as a whole; however, with a maximum value of 1.9, there were some that were riskier whereby the investors will expect a return more than the average market return and could lead to high cost of capital (Bodie, Kane, and Marcus 2011). Further, the mean and median values of unsystematic risk are very close and not far from the standard deviation

The result of the JB statistics indicates the absence of normality of the series which might lead to heteroscedasticity of the variance of disturbance (see Hill, Griffiths, and Lim 2011). The possible reasons for this might be the composition of the firms sampled in the present study as they are of different sizes, and from different industries (William 2008). As a result, the ordinary least square method of panel estimation cannot be utilized since it would not be efficient (e.g., Wooldridge 2010) for the purpose of analyses in the current study. In order to establish the presence of heteroscedasticity, the study conducted a series of white heteroscedasticity tests as recommended (e.g., Halcoussis 2005; Hill, Griffiths, and Lim 2011) and the results confirmed the absence of homoscedasticity.

However, in order to overcome the problem, system GMM was used as estimator in the present study (e.g., Arellano and Bond

1991; Blundell and Bond 2000; Roodman 2008). System-GMM combines equation in first difference and equation in level which enhances its efficiency. The efficiency of system-GMM rests on the cogency of additional moment's condition that the correlation between unobservable firm-specific effects in the level equation and the instruments in difference is equal to zero. Thus, instead of one step, the present study uses two-step system-GMM because it uses the first-step errors to construct heteroscedasticity consistent standard errors that corrected the heteroscedasticity problem identified above and gives better results (Blundell and Bond 2000; Roodman 2008).

TABLE 4
Summary of Descriptive Statistics

	Mean	Median	Minimum	Standard Deviation	Skewness	Kurtosis	Jarque-Bera	Probability
COC	0.11	0.10	-0.21	0.09	0.71	4.77	98.17	0.00
SPV	3.47	0.59	0.00	10.26	7.82	77.9	110983	0.00
WTICD	3.16	3.16	1.83	0.43	-0.29	2.85	6.80	0.03
WTICD Ethnicity*	1.44	0.00	0.00	1.62	0.28	1.19	68.09	0.00
*WTICD*Religion*	2.38	3.00	0.00	1.43	-0.94	2.16	79.78	0.00
SysRisk	0.21	0.07	-0.88	0.37	1.74	6.57	470.4	0.00
USysRisk	2.71	2.23	0.00	2.97	4.41	31.00	16317	0.00

4.2 CORRELATIONS AMONG IC, INTERACTION AND CONTROL VARIABLES

One of the problems associated with the introduction of moderating variable and interaction variables is the possibility of multicollinearity between interaction and independent variables (Field 2013; Hill, Griffiths, and Lim 2011). The result of correlational estimates as presented in Table 5 shows that multicollinearity could be a problem in the estimation of parameters. Specifically, the result reveals that none of the pairs of variables violate the benchmarks as started previously (Field 2013).

Similarly, the results of VIF and tolerance value presented in Table 6 show that all the variables had VIF of less than 2 and tolerance of higher than 0.5. These further suggest the absence of multicollinearity as the value are below suggested yardsticks of 10 and

0.10 respectively for VIF and its inverse (Field 2013; Hill, Griffiths, and Lim 2011; Wooldridge 2010).

TABLE 5
Correlations among Independent, Interaction and Control Variables

	WTICD	*WTICD* Religion*	*WTICD* Ethnicity*	*SysRisk*	*UnsysRisk*
WTICD	1				
*WTICD*Religion*	0.280**	1			
WTICD Ethnicity*	0.181**	0.024	1		
SysRisk	-0.135**	-0.035	-0.019	1	
UnsysRisk	0.032	0.019	-0.065	0.031	1

Note: ***, **, * indicates level of significance at 1%, 5% and 10% correspondingly.

TABLE 6
VIF and Tolerance of IC, Interaction and Control Variables

Variable	VIF	1/VIF
WTICD Ethnicity*	2.68	0.372906
*WTICD*Religion*	2.59	0.385958
WTICD	1.28	0.778901
SysRisk	1.09	0.917291
UnsysRisk	1.02	0.985125
Mean VIF	2.03	

4.3 IC DISCLOSURE, ETHNICITY AND CORPORATE MARKET VALUE

This section presents the findings from the estimate of two-step system GMM panel data analysis on the moderating influence of ethnicity of corporate board members of listed firms in Nigeria on the relationship between IC disclosure and corporate market value during the 2010-2014 financial years. These analyses were used to test Hypothesis 1of the moderating effect of ethnicity on the relationship between IC disclosure and corporate market value. The result in Table 7 reveals that there is a negative relationship between the independent variable (IC disclosure) and the dependent variables (cost of capital and share price volatility). This indicates that IC disclosure improves market value of listed firms in Nigeria which is in line signaling theories and

the prior studies of corporate disclosure (e.g., Burgman and Roos 2007; Haji and Ghazali 2013; Tracy-Anne, Michelle, and Murray 2014).

TABLE 7
Two-Step System GMM Results on IC Disclosure, Ethnicity and Corporate Market Value

Moderating Variable:	Ethnicity					
Dependent Variables:	Cost of Capital			Share Price Volatility		
Independent Variables	Coeff	S.E.	*z*-value	Coeff	S.E.	*z*-value
COC_{t-1}	0.121	0.034	3.52***			
SPV_{t-1}				0.254	0.0125	20.32***
WTICD	-0.053	0.024	-2.21**	-10.117	2.117	-4.78***
Ethnicity	0.192	0.081	2.37**	32.038	7.584	4.22***
WTICD Ethnicity*	0.021	0.015	1.42	9.271	1.496	6.19***
SysRisk	0.029	0.012	2.40**	1.250	0.875	1.43
UnsysRisk	-0.002	0.001	-1.76*	0.045	0.088	0.51
Constant	0.011	0.050	0.23	-28.521	5.103	-5.59***
Wald-χ^2				427.89***		
Serial Correlation Test						
AR(1)	-2.9895 (0.0028)			-0.92959 (0.3526)		
AR(2)	-0.94524 (0.3445)			-0.91591 (0.3597)		
Overidentifying Restrictions Test						
Sargan Test	52.66462 (0.2017)			32.69151 (0.2904)		

Note: S.E. is standard error. ***, **, * indicates level of significance at 1%, 5% and 10% correspondingly. Values in parentheses are probability values.

However, the interaction of ethnicity and IC disclosure indicates a positive relationship with cost of capital but it is not statistically significant. This implies the interaction impact on the relationship between the dependent and independent variables by changing the coefficient from negative to positive. However, the positive effect of interaction variable justifies the impact of ethnicity on the dependent and independent variables. Also, the result of data estimate on the moderating effect of ethnicity on the relationship between IC disclosure and share price volatility of the listed firms in Nigeria from 2010 to 2014 reveals a significant negative relationship between IC disclosure and share price volatility at the 1% level. It does mean that both independent variables reduce the degree of volatility of corporate share prices of listed firms on the floor of Nigerian Stock Exchange in the period under study.

However, the impacts of the interaction of moderating and independent variables on the dependent variable reveal a positive

significant effect at the 1% level on the share price volatility. This means that there is moderating influence of ethnicity on the association between disclosure of IC and share price volatility among the listed firms in Nigeria. Based on the results, it can be concluded that ethnicity of board of directors has significant effect on the relationship between IC disclosure and corporate market value among listed firms in Nigeria during the 2010-2014 financial years which is in line with hypothesized proposition of the present study. In the same vein, the positive effect of interactive variable based on the homogeneity nature of the board in term of ethnic composition adversely affects corporate market value as measure by cost of capital and share price volatility, thus, more heterogeneous board might be more desire.

Besides that, the results also reveal positive association between systematic risk and the two measures of corporate market. While it is not statistically significant with share price volatility, there is 5% level of significance with cost of capital. Meanwhile, there is an inconclusive finding on the effect of unsystematic risk on the corporate market value. The result reveals a moderate negative significant relationship between unsystematic risk and cost of capital and insignificant positive impact of share price volatility.

4.4 IC DISCLOSURE, RELIGION AND CORPORATE MARKET VALUE

The results of data analyses on the moderating effect of religion on the relationship between IC disclosure and corporate market value of listed companies in Nigeria during 2010-2014 is presented in Table 8 to test the second hypothesis of moderating effect of religious affiliation on the relationship between IC disclosure and corporate market value. Based on cost of capital, the results reveal a significant negative relationship with IC disclosure at the 99% confidence level which is in line with the expectation as the more the IC disclosure, the lower the cost of capital (Botosan and Plumlee 2002). However, the interaction variable has significant positive relationship with cost of capital at 1%. This implies that the interaction increases the corporate cost of financing among listed firms in the country during the period under study and that religion has significantly moderated the relationship between IC disclosure and cost of capital.

Furthermore, estimates from the data analysis regarding the moderating role of religious in members of the board of directors on the relationship between IC disclosure and corporate share price

volatility in Nigeria also confirm the significant relationship of moderating, independent and interaction variables on the dependent variable. While both independent and moderating variables have insignificant positive effect on the dependent variable, the interaction variable shows a significant positive association with the dependent variable at the 5% level.

TABLE 8
Two-step system GMM Results on IC Disclosure, Religion and Corporate Market Value

Moderating Variable:	Religion					
Dependent Variables:	Cost of Capital			Share Price Volatility		
Independent Variables	Coeff	S.E.	*z*-value	Coeff	S.E.	*z*-value
COC_{t-1}	-0.116	.063	-1.83*			
SPV_{t-1}				0.221	0.013	16.66***
WTICD	-0.183	0.053	-3.41***	-0.864	1.804	-0.48
Religion	0.572	0.503	1.14	-0.865	12.786	-0.07
*WTICD*Religion*	0.169	0.042	4.03***	3.240	1.623	2.00**
SysRisk	0.023	0.011	2.02**	1.371	0.786	1.74*
UnsysRisk	-0.002	0.001	-1.73*	0.073	0.074	0.99
Constant	-0.408	0.386	-1.06	-6.915	9.709	-0.71
Wald Chi.		21.02***			417.94***	
Serial Correlation test						
AR(1)	-3.1211 (0.0018)			0.10217 (0.9186)		
AR(2)	-0.66152 (0.5083)			-0.96094 (0.3366)		
Overidentifying Restrictions Test						
Sargan Test	33.50768 (0.2577)			29.89699 (0.4192)		

Note: S.E. is standard error. ***, **, * indicates level of significance at 1%, 5% and 10% correspondingly. Values in parentheses are probability value.

Hence, this confirms the expectation of the present study. By and large, there is evidence that religion of board of director members has significant influence on the relationship between IC disclosure and corporate market value among the listed firms in Nigeria during the 2010-2014 financial years. This is in consonance with the hypothesized significant moderating effect of religion on the association between IC disclosure and corporate market value in the present study. This implies that the homogeneity nature of the board in terms of religious composition will adversely affect the corporate market value of listed firms in Nigeria over the fiscal years 2010 to 2014.

In addition, the study carried out further post estimation tests in order to reaffirm the suitability of the estimator and the consistency

of the estimated parameters (See Tables 7 and 8). The second order serial correlation tests were performed since GMM can only produce reliable estimates if there is no second order serial correlation in the error terms (Blundell and Bond 2000; Roodman 2008; Schultz, Tan, and Walsh 2010). The result of post estimation robustness tests confirmed absence of second order serial correlation in the error. Hence, the estimated parameters are reliable with the GMM as it has overcome the problem the heteroscedasticity identified in the preliminary analysis presented earlier. Also, the results of instrument validity were achieved with Sargan test of over identifying test; the Sargan test reveals the validity of instrument which means they did not correlate with the disturbance as chi-square value was not statistically significant across the estimates (e.g., Arellano and Bond 1991; Roodman 2008).

5. CONCLUSION

The present study hypotheses a significant moderating impact of board of director's ethnicity on the relationship between IC disclosure and corporate value of listed firms in Nigeria. The results from two panel data regression models have been analyzed earlier. The findings confirm our assertion of significant moderating effect of ethnic diversity on the relationship between the dependent and independent variables.

However, the coefficient of interaction variables in the models indicate positive effect, meaning that the more the moderating effect, the higher the cost of capital and the share price volatility of the listed firms during the period under study. This, by implication, worsens the situation as firms will likely keep their cost of financing down and reduce share price volatility in order to maximize value. This might also suggest that homogeneity composition of board has adverse effect on the corporate market value of the sampled firms. Thus, a more diversified board along ethnic affiliation might equally be desired in order to enhancing the association between IC disclosure and corporate market value among the listed firms in the country.

Also, the present study hypotheses a significant moderating impact of religious affiliation of corporate board members on the association between IC disclosure and corporate market value of listed firms in Nigeria during the 2010-2014 financial years. Similarly, the results from the two-step system GMM panel data regression confirm the significant moderating effect of religion on cost of capital and share price volatility. Similarly, the coefficient of interaction variables

in the models indicates positive effect, meaning that the more the moderating effect, the higher the cost of capital and the share price volatility of the listed firms during the period under study. This, by implication worsens the situation as firms will likely keep costs of financing and share price volatility low in order to maximize value. Thus, a more diversified board along religious affiliation might equally be desired in order to enhancing the association between IC disclosure and corporate market value among the listed firms in the country

The findings of this study may also have some implications for regulators, especially the financial reporting council of Nigeria regarding the board composition in the country for corporate governance effectiveness. The board should be discouraged from being dominated by those from the same religion and ethnic affiliations. This could be done through issuance of standards on board composition, one of the responsibilities of regulators. However, this study is subject to certain limitations, which could be an opportunity for future research. First, the study's sample comprises of 91 listed firms on the main board of the Nigeria Stock Exhange; hence, the generalization of results to smaller firms in the alternative securities market ASeM, may be inappropriate. Future research could further investigate empirically whether the results can be generalized to smaller firms. Second, the study employs religious and ethnic background as moderating variables. Since the country operates an open economy whereby the foreigner could serve on the corporate board, the moderating role of foreign directorship might also be examined as further research. Finally, the study could be extended in the future with recent data such as the 2015-2016 financial years, which were unavailable at the time of this study.

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