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Monitoring Mechanisms, Gender, and Information System Structure in Nigerian Non-Financial Listed Companies

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Abstract

Monitoring mechanisms are tools for companies to protect the interests of the shareholders, most especially, the minority shareholders from the deviant behaviour of the management and board members. This study examines the relationship between monitoring mechanisms (directorship, internal and external auditing), gender and information system structure in Nigerian non-financial listed companies. The empirical tests for the study are by quantitative analysis approach with data from annual reports and questionnaires (for information system structure and internal auditing not obtainable from annual reports). The findings reveal that both gender and information system structure significantly relates to monitoring mechanisms (directorship, internal auditing and external auditing). This empirical study adds to the literature on the antecedents of organizational attributes in respect of gender and information system structure as related to monitoring mechanisms, particularly in Sub-Saharan African. Likewise, the findings suggest policy implication for the board of directors regarding appropriate board composition and structuring of the information system of a company to mitigate agency problems.

Keywords: directorship, external auditing, gender, information system structure, internal auditing, monitoring mechanisms

1. Introduction

Monitoring mechanisms (MMs) have attained high recognition in corporate governance as critical factors to meet the desires of policy-makers, economy regulators, investors, and company owners to certify the security of shareholders' interests in public and private companies. MMs are receiving top attention in companies and the business world at large because of their ability to serve as tools to monitor agency costs (Ibrahim & Samad, 2011). Also, MMs help to guard the interests of the shareholders, especially the minority shareholders from the unscrupulous behaviour of the management and board members (Connelly, Hoskisson, Tihanyi, & Certo, 2010). Likewise, MMs help to ensure the reliability and quality of financial reporting (R. C. Anderson, Mansi, & Reeb, 2004). MMs help to ensure that management and board of directors act in the interest of the shareholders (Tosi, Katz, & Gomez-mejia, 1997).

The demand for monitoring mechanisms (MMs) heightens with the advent of global financial scandals (Barac & Coetzee, 2012). Investors expect the management and board of directors of their companies to maximize their wealth (Myers, 1977). However, this expectation is being crushed as evidenced in incessant business failures, bankruptcies, mergers and lack of transparency in financial reporting of many companies (Bae, Baek, Kang, & Liu, 2012). This incident, therefore, brings to limelight the necessity for monitoring mechanisms as each of the incidence serves as a pointer to monitoring failure (Kuschnik, 2008) and corruption (TI, 2015).

The past two decades have witnessed some modifications, development and review of the code of corporate governance (Jo & Harjoto, 2011). Examples of such reformation are: the Sarbanes-Oxley Act passed in 2002 at U.S after the Enron saga (Li, Peters, Richardson, & Watson, 2012); Malaysian Code of Corporate Governance (Hashim & Devi, 2008); International Financial Reporting Standards (IFRSs) and Nigerian Code of Corporate Governance by Nigerian Securities and Exchange Commission (SEC, 2011). Governments passed these reformation and codes of corporate governance to (1) control management's opportunistic attitudes (He & Ho, 2010). (2) build investors' trusts and confidence in management and boards of directors (Cadbury, 1992). (3) harmonize procedures, accounting policies, and regulations for global financial reporting.

Nigeria is a country in the Sub-Saharan Africa with a population of 178.5million people (2014 World Population Review) as at the year 2014 and ethnic tribes of about 250 (Curry, 2014). Nigerian's rating in the Corruption Perceptions Index (TI, 2003-2014) over years and World Bank's Doing Business Report in The Guardian of 27 October 2015 explain the frequency of corruption and monitoring failures in Nigerian companies and parastatals. The recognition of this fact led to the determination to strengthen the capital market in consideration of the contribution of the capital market to the economy of the nation (SEC, 2011). Hence, the approval of 2011 SEC Code to replace the 2003 SEC Code (SEC, 2011). The country aims at being one of the 20 top economies in the world come the year 2020 (Fodio, Ibikunle, & Oba, 2013). Further to this is the approval of other regulations such as the Financial Reporting Council Act, 2011 and review of 1990 CAMA in 2004. However, all these reformation coupled with the achievement as the giant of Africa (Adebayo & Adetayo, 2014) notwithstanding, the poor performance evidenced in the level of poverty, unemployment that culminates into corruption persist.

Corruption and improper record keeping are rendering the implementation of the good laws that makes for good corporate governance very difficult (Adegbite, 2012). This study expects that monitoring mechanisms will help to resolve agency problems and reduce information asymmetry existing between management and shareholders. It, therefore, empirically considers two antecedents of organizational attributes in relation to monitoring mechanisms. The antecedents of organizational attributes to consider are gender and information system structure. The study examines monitoring mechanisms in the light of the directorship, internal auditing, and external auditing. Agency theory will be used to explain the relationship between gender, information system structure and monitoring mechanisms.

There is a dearth of research on the extent of impacts of gender and information system structure in respect of monitoring mechanisms as a combination of directorship, internal and external auditing. There are literature on antecedents of organizational attributes and monitoring mechanisms. These are mostly in developed and transiting nations like U.S, U.K, and Malaysia. The literature are very scanty in Sub-Saharan Africa (Mustapha & Che-Ahmad, 2011; D. Anderson, Francis, & Stokes, 1993; Aguilera, Cuervo-Cazurra, & Kim, 2009; Sarens & Abdolmohammadi, 2011; Adeyemi, Okpala, & Dabor, 2012). With exception of two literature, each of the literature tests either one or two (Huson, Parrino, & Starks, 2001; Marra, Mazzola, & Prencipe, 2011) of the monitoring mechanisms. The only two literature that combined the three dimensions of monitoring mechanisms (directorship, internal and external auditing) are Anderson et al. (1993) and Mustapha and Che-Ahmad (2009). However, to the best of the knowledge of the researchers, the only literature that tests the impact of information system structure on monitoring mechanisms is Mustapha and Che-Ahmad (2009). There is none yet on gender and monitoring mechanisms.

This study will, therefore, extend the work of Mustapha and Che-Ahmad (2009) by introducing gender to the model. Mustapha and Che-Ahmad (2009), test information system structure in relation to monitoring mechanisms in Malaysian listed companies.

There is a need for more research on monitoring mechanisms considering the dearth of research on gender as related to the board of directors' composition, information system structure, and monitoring mechanisms in sub-Saharan countries, which includes Nigeria. The recent adoption of the International Financial Reporting System and review of the Code of Corporate Governance also necessitates investigation of the antecedents of organizational attributes and monitoring mechanisms.

This paper, therefore, establishes the impact of gender (as a component of the composition of the board of directors), and information system structure of the listed companies on the agency problems between the management and the investors. The findings of the study are useful to the management, board of directors, internal and external auditors, regulatory agents, government, shareholders and the general public.

The next section of this paper is on literature review and hypotheses development. Next to this is the section that discusses methodology, describing research design and process of data collection. Lastly is the section for discussion of results and conclusion of the study.

2. Literature Review and Hypotheses Development

2.1 Underpinning Theories

Fama (1980) explores agency problems and the theory of the firm. The study opines that agency theory is concerned with the need to separate ownership from control to stipulate agency monitoring. The study further opines that the monitoring mechanisms, which the separation specifies allow for efficiency in the company. Jensen and Smith (1985) review the relationship between stockholder, manager, and creditor interests, applying the agency theory framework. The study maintains that agency theory is useful to evaluate contractual provisions purposed to monitor the bond between the management and shareholders. The study also reveals that agency theory helps to control the conflicts of interest between the two parties. Many literature examine organizational attributes and monitoring mechanisms in the context of agency theory (Liu, 2012, Mustapha & Che-Ahmad, 2013). This paper, therefore, examines how female board directors and the structuring of information systems help the shareholders to monitor the agents (management).

Gibson (2000) examines the moral basis of stakeholders' theory. The study reports that in stakeholders' theory, the managers are fiducially responsible to stakeholders. It further opines that each stakeholder has a claim on the company and for no reason should become a means to an end. It also suggests that such stakeholders should be given the chance to participate in making decisions, directing the future of the company. Freeman and Phillips (2002) examine stakeholder theory as a libertarian defence. The study suggests that the relationship of management with the groups, whose action can affect the purpose of the existence of a company, determines the company's ability to maximize the wealth of the shareholders. Some of the existing literature that used stakeholder theory as the basis of their investigation are Knox and Gruar, (2007); Cai, Jo, and Pan (2012). This paper, therefore, examines how female board directors and the structuring of information systems help to ensure that decision makers consider the interests of all stakeholders in making decisions especially as it affects shareholders' wealth maximization.

The study of Spence (1973) on job market signaling, documents that signaling theory is about the symbols that decision makers are using to resolve information asymmetry. These symbols should be obvious and also dear to mimic (Ross, 1977). Aly and Simon (2009), investigate the determinants of corporate internet reporting. The study suggests that companies with a high degree of good performance are likely to divulge information in order to signal its profitability to investors (Oyeler, Lasad, & Fisher, 2003). The study of Oyeler et al. (2003), reports that the company will be so much transparent regarding its profit in order to earn shareholders' support for the continuation of positions and compensation for the management. There are extant literature that use signaling theory such as Okhmatovskiy and David (2011); Aly and Simon (2009). This paper, therefore, examines the symbolic implication of female board directors and information system structure.

2.2 Monitoring Mechanisms

Prior literature suggests various internal and external monitoring mechanisms (MMs) with steps being taken from time to time to improve the MMs (Fama, 1980; Anderson et al., 1993; Sarens, De Beelde, & Everaert, 2009; Mustapha & Che-Ahmad, 2011a;). The cause of the suggestions and improvement actions is due to incessant business failures, bankruptcies, mergers and lack of transparency in financial reporting of many companies (Bae et al., 2012), since the advent of shocks of the 1820s, 1870s, 1970s, 2007, and the great depression of 1930s (Shaikh, 2011). These incidence led to shareholders losing their confidence in the true position of financial statements from the managements and board of committees of the listed companies (Cadbury, 1992; Liu, 2012). It is necessary to check the opportunistic attitudes responsible for these incidence (He & Ho, 2010), hence the review of policies, regulations and laws for necessary monitoring to curb the agency problems and information asymmetry (Okpala, 2012).

Aguilera et al. (2009), examine codes of good governance worldwide. The study reports that firms in the developed and transiting countries voluntarily adopt codes of corporate governance. However, the insufficient monitoring role of market, barriers from weak institutional systems and unclear links to the performance of firms persist. It further reports that the enforcement level of the codes of governance is a reflection of country specifics such as culture, institutional settings, politics and national economy. Barac and Coetzee (2012), investigate the effect of internal audit function and demand for internal auditing. The study documents that the need to restore the confidence of the investors and ensure transparency and accountability in companies requires the strengthening of regulatory frameworks. It further claims that effective monitoring mechanisms are required to strengthen the regulatory frameworks and improve the structures of corporate governance. The study of Anderson et al. (1993), on auditing, directorships and the demand for monitoring find that the effectiveness of this set of monitoring mechanisms depends on the company's mix and growth of assets.

2.2.1 Directorship

Anderson et al. (2004), investigate characteristics of the board, integrity of accounting report, and the cost of debt. The study documents that boards of directors have tasks to monitor and discipline senior management. Hence, the boards are required to render audited accounts to company creditors. Cadbury (1992), report of the committee on the financial aspects of corporate governance in U.K in paragraph 1.8 claims that directors have the responsibility to monitor, establish controls for the activities of the company and ensure functionality of the controls.

2.2.2 Internal Auditing

Barac & Coetzee (2012), in their study on internal audit function and demand for internal auditing find that internal auditing (IA) in South Africa helps to monitor risks and evaluates controls in a company. The study documents that IA is a keystone of effective corporate governance. It also claims that IA has been receiving attention more than ever before the corporate scandals. Sarens and Abdolmohammadi (2011), investigate monitoring effects of the internal audit function. The study finds that IA is central to developing an accountability relationship between management and audit committee. Thereby, IA helps to resolve some agency problems, especially between the committee or board of directors and management. It further reports that an effective internal auditing provides audit committees high level of comfort to affect their monitoring responsibilities.

2.2.3 External Auditing

Anderson et al. (1993) examine auditing, directorships and demand for monitoring. The study finds that external auditing (EA) together with the directorships and internal auditing is a part of the set of monitoring mechanisms accessible to companies. Chow (2012) investigates the demand for external auditing. The study reports that companies engage EA services for many reasons apart from the statutory requirements. It suggests the following as some of the reasons for hiring EA: (1) operational efficiency, which is a function of economies of scale in the audit market. (2) When the management perceives that the external auditor is not likely to connive with the company's staff and (3) industry characteristics especially as related to the complexity of the firm or industry.

2.3 Gender

Bear, Rahman and Post (2010) examine the impact of board diversity and gender composition on corporate social responsibilities (CSR), using 689 listed companies. The study argues that female board members positively impact the rating for corporate social responsibility, which in turn has a positive impact on the reputation of the company. It finds that the presence of females on the board results in raising the CSR and corporate reputation. Also, female board members help to allow for critical board processing in terms of analysis for decision making. The study of Lenard, Yu, York, and Wu (2014) investigate how board gender diversity impacts on firm risk. The study finds that a board with greater female directors associates with less unevenness in stock return. However, Bøhren and Staubo (2015), examine mandatory gender balance and independence of the board suggests that gender diversity strongly increases the independence of the board but reduces firm value. The findings of Ujunwa (2012), collaborates the negative impact of gender diversity on firm value. Ujunwa (2012), in his investigation of board characteristics and Nigerian firms' financial performance reveals negative relationship between gender diversity and firm performance. There is, therefore, mixed findings on the relationship between gender diversity and monitoring mechanisms.

Agency theory suggests that investors value public firms with independent directors on the board of directors. Stakeholder theory, suggests that gender balance relates with increased board independence and needs for diverse stakeholders on the board of directors. Signaling theory, suggests the presence of female directors on boards of directors as a signal to indicate that a company pays attention to minority shareholders and women. This study, therefore, expects that board gender diversity will ensure compliance with policies, code of corporate governance, and considers the interest of all stakeholders in decision-making. Therefore, this study considers related hypotheses as shown below:

H_1 Female directors positively influence the demand for monitoring mechanisms (directorship, internal and external auditing).

H_{1i} Female directors positively influence the demand for directorship monitoring mechanisms

H_{1ii} Female directors positively influence the demand for internal auditing monitoring mechanisms

H_{1iii} Female directors positively influence the demand for external auditing monitoring mechanisms

2.4 Information System Structure

Information system structure (ISS) is about the decision of a company to centralize or decentralize its information system in terms of operation, development and management (Chervany, 2013). Heo and Han (2003), investigate the performance measure of information systems. The study finds that companies with centralized ISS focus more on system quality while companies with decentralized ISS have their focus on information quality. The study also finds that companies with centralized cooperative computing consider the organizational impact and system quality. The study of Hitt and Brynjolfsson (1997), examine information technology and internal firm organization. The study finds that the information technology associates with work system including decentralized authority, incentives justifying decreased observability and also increases need of competency. Weill and Olson (1989), consider investment in information technology. The study documents that organizational culture, implementation process and skill of management influence the effectiveness of the output from IT investment.

The findings of Hitt and Brynjolfsson (1997), regarding decreased observability and need for competent workers are a pointer to the need for monitoring mechanisms. It implies that certain monitoring mechanisms are required to ensure that the information system is structured to produce quality information (financial and otherwise) for decision making. The findings of Weill and Olson (1989), in respect of implementation process of IT and skill of management impact on IT output, also points to the link of information system structure (ISS) to monitoring mechanisms. There are literature on information system structure (ISS), but with no evidence of any link to monitoring mechanisms except by Mustapha and Che-Ahmad (2013).

The three underpinning theories (agency, stakeholders and signalling) recognize the existence of information asymmetry between management and shareholders. Management has more information but fails to disclose all to the shareholders because of its opportunistic attitude. Following the above discussion, it is expected that information system structure (ISS) will be a tool to ensure that the company's IT generates quality financial reports that will help the shareholders to have sufficient information for decision making. This study, therefore, considers related hypotheses as shown below:

H_2 Information System Structure (ISS) positively influences the demand for monitoring mechanisms (directorship, internal and external auditing).

H_{2i} Information System Structure (ISS) positively influences the demand for directorship as a monitoring mechanism.

H_{2ii} Information System Structure (ISS) positively influences the demand for internal auditing as a monitoring mechanism.

H_{2iii} Information System Structure (ISS) positively influences the demand for external auditing as a monitoring mechanism.

3. Research Methodology

3.1 Sample

The researchers used a quantitative method using data from annual reports and a questionnaire. The study uses 111 annual reports of Nigerian non-financial listed companies. The study excludes financial listed companies due to different legal structure and regulatory framework for the industry. In addition to the annual reports, questionnaires were used to solicit data on information system structure and internal auditing. The questionnaire answers the question regarding whether or not the administration and control of information systems are centralized or decentralized. It also provides answer to the costs of internal auditing. The researchers subjected the questionnaire to content validation through seven experts, all of whom are academicians and Ph.D. certificate holders from different universities of Nigeria. Information System Structure (ISS) is categorical and sourced by the questionnaire. Board gender (BSB) is from the annual reports and it is a continuous variable. The dependent variable, monitoring mechanisms (MC) is also continuous.

The questionnaires were administered to the internal auditor and either the head of accounts or the company secretary of each of the non-financial listed companies visited by self and research assistance engaged in addition to copies sent by emails to the companies. The data was keyed into Microsoft Excel for further analysis in Stata 12.

3.2 Measurement

Dependent Variable

Monitoring mechanisms (MC) is the total costs of monitoring measured as the summation of the costs of non-executive directors (NEDIR), internal audit (IAC) and external audit (EAC). The measurement for NEDIR is the non-executive directors' remuneration in Nigerian currency, naira (N). IAC is the amount paid to the internal auditors in Nigerian currency, naira (₦) while EAC is the fees paid to the external auditors in Nigerian currency, naira (₦).

3.3 Independent Variables

The measurement for the board gender (BSB) is the proportion of female to male directors while that of information system structure (ISS) is 1 for centralized ISS and 2 for decentralized ISS.

Control VariablesThe measurement for the company size (Cz) is total assets; firm performance (ROA) is the ratio of profit before interests and tax to total assets while that of company's growth is Tobin's Q = ratio of the market value of the company to its total assets.

3.4 Research Model

The model for this study is:

$$MC_{it} = \alpha_{it} + \beta_1 BSB_{it} + \beta_2 ISS_{it} + \beta_3 Cz_{it} + \beta_4 FP_{it} + \beta_5 GR_{it} + \mu_{it} + \varepsilon_{it}$$

Where:

MC	=	Monitoring Cost
BSB	=	Proportion of female to male directors
ISS	=	Information System Structure
Cz	=	Company Size
FP	=	Company Performance
GR	=	Company's growth

4. Results and Discussion

The researchers obtained the annual reports from Nigerian Stock Exchange. 332 questionnaires were administered in 166 listed companies, one each for the internal auditor, head of accounts or company secretary expecting to have at least one response from each company.

4.1 Descriptive Statistics

117 (70%) questionnaires were received, but there were no corresponding annual reports for 6. The remaining 111 (67%) questionnaires were analysed with the relevant annual reports using SPSS 22 for descriptive analysis and Stata for the hypotheses testing. The table in the appendix presents the descriptive data from the questionnaires. It shows that 80.2% of the respondents are male while the remaining 19.8% are female. 48.6% of the respondents are Internal Auditors, 38.7% are Accountants, and 12.6% are the company secretaries. 46.8% of them have been with their respective companies for less than 5 years, 36% for 6 to 10 years, 8.1% for 11 to 15 years, 8.1% for 16 to 20 years and 0.9% for 20 years and above. The working experience of the respondents are 1-5 years (11.7%), 6-10 years (39.6%), 11-15 years (25.2%), 16-20 years 14.4% and 20 years and above (9%).

The F-test reveals that the model is statistically significant. The mean values for independent variables range from 0.090158 and 1.267267 with a minimum score of 0 and a maximum score of 3. Thus, the result meets the basic requirement for multivariate analysis. Only 59% of the listed companies have female directors. The information system of 74% of the companies is centralized.

4.2 Multicollinearity

Tables 1 and 2 below are the results of the regression model that present collinearity, multicollinearity, variance inflation factors (VIF) and tolerance of the study using Stata. Table 1 reveals that the variables are not highly correlated with one another. All the correlations values are well below 0.9, hence, likewise, the VIF is below 5 and tolerance is above 0.2. This study can, therefore, conclude that there is no multicollinearity problem for variables that this paper examines.

Table 1. Pearson correlation

Variables	Monitoring Costs	Female Board Directors	Information System Structure	Company Size	Company Performance	Company Growth
Monitoring Costs	1.00					
Female Board Directors	0.19	1.00				
Information System Structure	0.25	0.05	1.00			
Company Size	0.76	0.17	0.16	1.00		
Company Performance	0.21	0.12	0.09	0.21	1.00	
Company Growth	0.08	0.14	-0.04	0.09	0.27	1.00

Table 2. Variance inflation factors (VIF)

Variable	VIF	1/VIF
Female Board Directors	1.05	0.951006
Information Systems Structure	1.03	0.966504
Company Size	1.09	0.916495
Company Performance	1.13	0.887483
Company Growth	1.1	0.911276
Mean VIF	1.08	

4.3 Regression Analysis

The researchers ran pool, fixed effect and Random effect. However, the researchers had to run panel-corrected standard errors (PCSEs) considering its robustness nature (Beck & Katz, 1995) by which the study could correct for heteroscedasticity and autocorrelation (Bailey & Katz, 2011). Table 3 presents result from PCSEs explaining the relationship between board gender, information system structure and monitoring mechanisms. The result suggests that both the board gender (BSB) and information system structure (ISS) as well as the three control variables (company size, performance and growth – Cz, FP and GR) are significant predictor variables for monitoring mechanisms. The results show that both BSB (b=2.24, z=6.27) and ISS (b=0.85, z=11.3) significantly affect monitoring mechanisms (MC) at 1% level using PSCE after logging for company size (Cz). It indicates that a unit increase in BSB will yield 2.24-unit increase in the predicted MC. A unit increase in ISS will yield 0.85-unit increase in the predicted MC. The three control variables company size (Cz – b=2.14, z=22.32), company performance (FP – b=0.82, z=2.12), and company growth (GR - b=-0.02, z=-1.65) are also related to monitoring mechanisms. A unit increase in Cz will yield 2.14-unit increase in the predicted monitoring mechanisms (MC). A unit increase in FP will yield 0.82-unit increase in the predicted MC. A unit increase in GR will yield -0.02-unit decrease in the predicted m MC. However, GR is negatively significantly related to monitoring mechanisms. The z-tests further confirm the significance of the relationship as all the results for the tests are above the threshold of 1.65. Likewise, the p-values are below 5% for BB, ISS, and Cz at 1%, FP at 5% and GR at 10%.

Table 3. Panel data regression results

Variables	Coef.	Std. Err.	z	P>z
Female Board Directors	2.238585	0.357091	6.27	0.000
Information Systems Structure	0.848644	0.075128	11.3	0.000
Company Size	2.1354	0.09566	22.32	0.000
Company Performance	0.816091	0.385263	2.12	0.034
Company Growth	-0.02314	0.014053	-1.65	0.100
_cons	0.042691	0.154926	0.28	0.783

An increase in the number of female board directors implies increased monitoring costs. The study provides an evidence that the more the number of females on the board of directors the more the demand for monitoring mechanisms. Hence, the presence of female board directors influences the demand for monitoring mechanisms. The result validates Gamba and Goldstein (2009), documentation that "financial measures excel where women serve." The study also claims that expectation of women in respect of their responsibilities as directors aids board's effectiveness. While some governments are enforcing gender equality on boards (Abdullah, Ismail, & Nachum, 2015), Nigerian code of corporate governance only request that gender composition be included as part of information on the criteria for the appointment of directors (SEC 2011, Par. 13.2).

Likewise, information system structure is an important factor in predicting the demand for monitoring mechanisms. This is because if the structure is decentralized, it requires more monitoring and possible adjustment of work procedures to enhance overall goal of the company. The overall goal of any company is to maximize shareholders' wealth. Information system structure is a part of internal control of a company. Hence, the findings of Mustapha and Che-Ahmad reveal that companies with centralized information system have preference for internal auditing. The findings conform to the rationale for internal audit responsibility for internal control, of which information system is a component. Also, most information needed to make decisions that aligns the interests of management and shareholders are processed using information systems. The Nigerian code of corporate governance, requests companies to ensure that they integrate into their risk management framework the day to day operation of the business that provides guidelines to administer key risks in its technology (SEC 2011, Par. 29.2b). This is in no doubt showing how important the regulators view information system structure regarding monitoring mechanisms and its usefulness in producing transparent financial reports that builds up shareholders confidence in the company.

The study ran similar tests for each dimension of the MC (directorship, internal auditing and external auditing). The results are similar to the results for the construction, MC as all the tested variables significantly relates to each dimension of MC.

The p-value of chi-square test statistics proves that the model is significant.

Overall, the results produce evidence that board gender has a significant impact on monitoring mechanisms in the non-financial listed companies in Nigeria because a greater percentage of the companies are with female board members. This is in accordance with findings in the extant literature that even with exposure to sensitive information or more critical situations; women maintain more balanced proper behavior than men (Horak, 2015). By this nature, female board directors can help to align the interests of management and shareholders, thereby resolving type I agency problems. Also, female board directors are mostly independent directors (Bøhren & Staubo, 2015). Hence, they are likely to ensure none expropriation of the interests of minority shareholders, thereby resolving type II agency problems. Likewise, they can help to ensure that the interests of all stakeholders are well considered in decision making.

The results also provide evidence that information system structure has a significant impact on monitoring mechanisms. This is due to the fact that its main focus is to ensure proper flow of information for decision-making in a company. It is also capable of serving as a tool for monitoring the opportunistic behavior of management and board of directors in a company that can afford to invest in and structure information systems that allow for monitoring (Eisenhardt, 1989). Its impact on monitoring is recognized to the extent that Sarbanes-Oxley Act of 2002 (SOX) takes cognizance of it in section 404. SOX Section 404 highlights how important it is to control the financial reporting function of management information systems (Li et al., 2012). Centralization of information system enables close monitoring of management activities for approval or change in work activities (King, 1983). Thus, the study suggests that information system structure is part of the internal control that calls for intensive monitoring especially by the internal auditor on a daily basis.

There are studies on monitoring mechanisms (Dedman, Kausar, & Lennox, 2013; Gerakos, 2013; Dabor, & Ibadin, 2013), but none tests the impact of board gender on the three dimensions of monitoring mechanisms in one study. Also, only one literature tests the relationship between the information system structure and monitoring mechanisms (Mustapha & Che-Ahmad, 2009).

5. Conclusion

This study adds to the literature on relationship between board gender, information system structure (ISS) and monitoring mechanisms as extant literature tests the two independent variables in relation with dependent variables other than monitoring mechanisms. To the best of the knowledge of the researchers, only one literature (Mustapha & Che-Ahmad, 2009 test ISS in relation to the monitoring mechanisms. The study will be the first for Sub-Saharan Africa to test board gender and information system structure with monitoring mechanisms in combination of directorship, internal and external auditing. The primary contribution of this study is that board female directors and information system structure positively and significantly relate to monitoring mechanisms. Likewise, the control variables, company size and performance positively and significantly relate to monitoring mechanisms while company growth negatively and significantly relate to monitoring mechanisms. These findings have significance implication for the board of directors, internal and external auditors, investors as well as regulatory agents with the outlook for strengthening corporate governance of the listed companies. Likewise, the academic community should explore more on these variables, especially for Sub-Saharan Africa.

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Appendix

Respondents' Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	89	80.2	80.2	80.2
	Female	22	19.8	19.8	100.0
	Total	111	100.0	100.0	
Respondents' Designations					
Valid	Internal Auditor	54	48.6	48.6	48.6
	Accountant	43	38.7	38.7	87.4
	Company Secretary	14	12.6	12.6	100.0
	Total	111	100.0	100.0	
Respondents' Working Experience with the Company					
Valid	1-5 years	52	46.8	46.8	46.8
	6-10 years	40	36.0	36.0	82.9
	11-15	9	8.1	8.1	91.0
	16-20	9	8.1	8.1	99.1
	20 and above	1	.9	.9	100.0
	Total	111	100.0	100.0	
Respondents' Working Experience					
Valid	1-5 years	13	11.7	11.7	11.7
	6-10 years	44	39.6	39.6	51.4
	11-15	28	25.2	25.2	76.6
	16-20	16	14.4	14.4	91.0
	20 and above	10	9.0	9.0	100.0
	Total	111	100.0	100.0	
Respondents' Nationality					
Valid	Nigerian	108	97.3	97.3	97.3
	Others	3	2.7	2.7	100.0
	Total	111	100.0	100.0	